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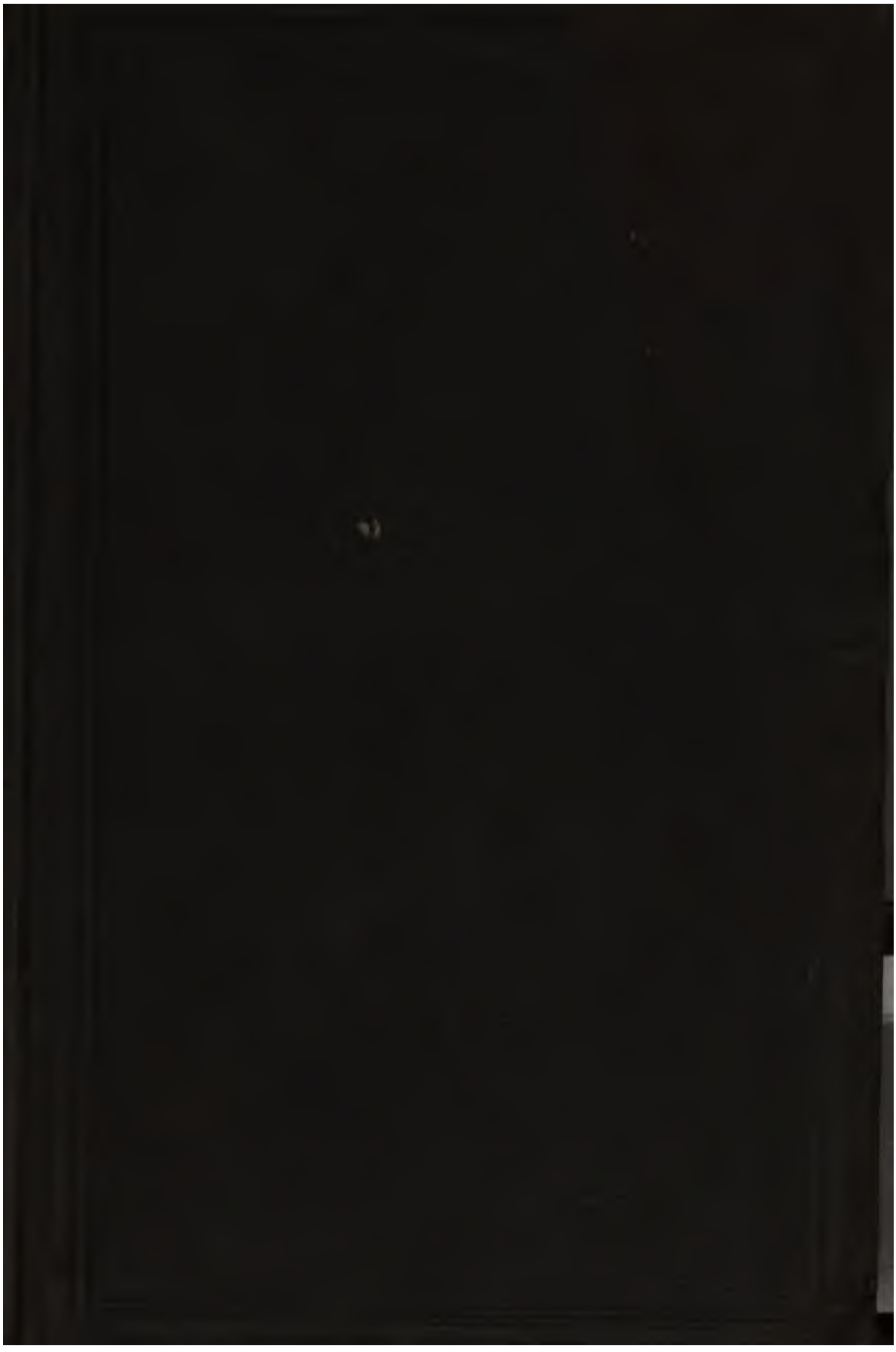

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TREASURY DEPARTMENT.

REPORT

ON THE

INTERNAL COMMERCE

OF THE

UNITED STATES,

BY

JOSEPH NIMMO, JR.,

CHIEF OF THE BUREAU OF STATISTICS, TREASURY DEPARTMENT.

SUBMITTED MAY 6, 1885.

COMMERCE AND NAVIGATION.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1885.

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TREASURY DEPARTMENT,
BUREAU OF STATISTICS,
Washington, D. C., May 6, 1885.

SIR: I have the honor to submit to you the following report on the Internal Commerce of the United States, prepared under the provisions of the act of March 3, 1875. That act requires, among other things, that the chief of this Bureau shall annually report to the Secretary of the Treasury, for transmission to Congress, statistics and facts in regard to commerce with foreign nations and among the several States. This work is, for convenience as well as from the necessities of the case, presented in separate volumes, the one relating to foreign commerce and the other to internal commerce.

It is impossible to deal with the internal commerce of the United States as a whole, owing to the fact that it is impracticable to procure statistics expressive of its total value from year to year, and also owing to the almost infinite variety of conditions under which it presents itself. The plan has therefore been pursued in the reports of this office of treating each year of the commercial, industrial, and transportation interests of some particular city or cities or section of the country, or of some important article or articles of commerce, the production of which and the trade in which have an important bearing upon the commercial and transportation interests of the country, or serve to illustrate some important condition or conditions governing the course of the commercial and industrial interests of the country. The present report relates especially to the commercial, industrial, and transportation interests of the Pacific coast, to the movement of the cotton crop and to the range and ranch cattle business of the United States.

There have also been prepared under my direction, by experts in the employ of this Bureau, the following commercial statements: A report by Mr. William Burchard, chief of compilation division of the Bureau of Statistics, in regard to the Canadian Northwestern Provinces and the conditions governing the trade between those provinces and the United States; a review of the commerce of Baltimore, presenting its leading commercial and manufacturing industries, with the relationships which that city bears as a distributive and productive market to the various States and Territories of the United States, and a general review of its transportation interests, by Mr. John R. Bland; a statement by Mr. William Thurstone in regard to the canals of the State of New York, Saint Lawrence River navigation, the railroad transportation interests

of Canada, the commercial, industrial, and transportation interests of Buffalo, and historical facts of interest in regard to transportation in this country; a statement in regard to the commercial, industrial, and transportation interests of the city of Cincinnati, by Mr. Sidney D. Maxwell, superintendent of the Chamber of Commerce of that city; a statement by Mr. W. H. Miller, secretary and treasurer of the Kansas City Board of Trade, in regard to the commercial, industrial, and transportation interests of that city and of the area tributary to it; a statement by Mr. Charles Burdett Hart in regard to the commercial and industrial interests of the Kanawha Valley and of West Virginia; a statement in regard to the movements of produce to and from New Orleans, by Mr. Henry G. Hester, secretary of the New Orleans Cotton Exchange. These statements may be found in the appendix to this report.

Owing to the necessity of sending this entire report to the printer at the present time, it has not been practicable for me to prepare such statements as I had proposed in regard to the subjects embraced in these reports of experts.

I am, sir, very respectfully, yours,

JOSEPH NIMMO, JR.,
Chief of Bureau.

Hon. DANIEL MANNING,
Secretary of the Treasury.

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THE INTERNAL COMMERCE OF THE UNITED STATES.

THE COMMERCIAL, INDUSTRIAL, AND TRANSPORTATION INTERESTS OF THE PACIFIC SLOPE.

The termination of the war with Mexico, the annexation to the United States of that extensive area embraced in what now constitutes the States of California and Nevada, the Territories of Utah and Arizona, and a part of the State of Colorado and of the Territory of New Mexico, the discovery of gold in California, and her admission as a State into the Union, occurred during the brief period from 1848 to 1850, inclusive. During the year 1849 and for several years afterwards a tide of immigration flowed into California, exceeding in magnitude any movement of the kind ever before seen in this country. This throng of immigrants was composed almost entirely of persons moved by such hopes and by such imaginings as have inspired the hearts of men, who, during the last four hundred years, have ventured forth in search of El Dorado.

Since that time great industrial, commercial, and transportation interests have sprung up west of the Rocky Mountains. Agricultural resources of enormous magnitude and value have been discovered and developed, and several transcontinental rail lines and parts of lines have been constructed, by means of which San Francisco is now more easily and economically accessible to New York than was Chicago at the time gold was first discovered in the placers of the Sacramento. All this has occurred within the memory of persons now living, many of whom have been participants in the acts and events here mentioned, and who, even at this day, would regard it as an unkindness to be designated as old men. It is proposed to consider in this report the commercial, industrial, and transportation interests of California, Oregon, and Washington Territory, with especial reference to the commercial relations existing between the States and the Territory just mentioned and the States situated east of the Rocky Mountains.

This subject has during the last four years become one of great public interest as the result of the completion of the Southern Pacific Railroad, which with its eastern connecting lines forms an all-rail line from San Francisco to Galveston and New Orleans, and the more recent completion of the Northern Pacific Railroad, the Atlantic and Pacific Railroad, the Denver and Rio Grande, and the Denver and Rio Grande

Western Railroads, and of the so-called Oregon Short Line; all of which railroads, as well as the Central and Union Pacific lines, are delineated on map No. 5, at the end of this report.

The change which has taken place in the industrial interests of the Pacific slope since the quest for gold first drew immigrants to that section is clearly indicated by the fact that during the year 1884 the value of the cereal products of California, Oregon, and Washington Territory amounted to $57,828,877 and that the value of their gold and silver product was only $17,366,000.

The following tables clearly tell the story of the fluctuations and recent decrease in the production of the precious metals on the Pacific slope and of the enormous increase in the agricultural interests of that section.

The total value of the gold and silver product of California, Oregon, Nevada, and Washington Territory during each year from 1859 to 1884 is shown in the following table:

Statement showing the value of the gold and silver product of California, Oregon, Nevada, and Washington Territory from 1859 *to* 1884.

Year.	California.	Oregon.	Nevada.	Washington Territory.	Total.
1859	$50,000,000	.....	.....	.....	$50,000,000
1869	22,500,000	$3,000,000	$14,000,000	.....	39,500,000
1870	25,000,000	3,000,000	16,000,000	.....	44,000,000
1871	20,000,000	2,500,000	22,500,000	.....	45,000,000
1872	19,049,098	2,000,000	25,548,801	.....	46,597,899
1873	18,025,722	1,585,784	33,254,507	.....	52,866,013
1874	20,300,531	609,070	35,452,233	$154,535	56,516,369
1875	17,753,151	1,165,046	40,478,369	81,932	59,478,498
1876	16,900,000	1,600,000	41,751,000	250,000	60,501,000
1877	16,000,000	1,100,000	44,000,000	350,000	61,450,000
1878	17,634,068	1,100,000	47,676,863	325,000	66,735,931
1879	20,000,000	1,170,000	21,560,000	95,000	42,825,000
1880	18,600,000	1,105,000	15,700,000	410,000	35,815,000
1881	18,950,000	1,150,000	9,310,000	120,000	29,530,000
1882	17,645,000	865,000	8,750,000	120,000	27,380,000
1883	15,580,000	680,000	7,950,000	80,500	24,290,500
1884	16,600,000	680,000	9,100,000	86,000	26,466,000

The growth of the cereal product of California, Oregon, and Washington Territory, and the quantity of cereals exported from Pacific coast ports is exhibited in the following table:

Statement showing the quantity of the cereals produced in California, Oregon, and Washington Territory during the crop years 1849, 1859, *and from* 1869 *to* 1884, *inclusive, and the quantity and per cent. exported to foreign countries during the corresponding commercial years ended June* 30.

Year ended June 30—	California.	Oregon.	Washington Territory.	Total production.	Quantity exported.	Exported.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Per cent.*
1849	39, 276	276, 187	.....	315, 457	.....	.....
1859	12, 026, 637	1, 820, 278	230, 737	14, 077, 652	1, 726, 187	12. 26
1869	28, 487, 124	4, 659, 064	554, 549	33, 700, 737	10, 065, 625	29. 87
1870	24, 280, 400	4, 432, 200	909, 931	29, 622, 531	7, 722, 802	26. 07
1871	26, 541, 200	4, 360, 600	1, 265, 313	32, 167, 113	4, 140, 284	12. 87
1872	36, 664, 800	4, 532, 600	1, 620, 695	42, 818, 095	18, 860, 503	44. 05
1873	35, 505, 991	6, 006, 100	1, 976, 077	43, 488, 168	17, 160, 489	39. 46
1874	43, 450, 000	7, 736, 200	2, 331, 459	53, 517, 659	20, 029, 792	37. 43
1875	36, 560, 000	7, 500, 500	2, 686, 841	46, 747, 341	15, 716, 901	33. 62
1876	45, 928, 000	8, 090, 000	3, 042, 223	57, 060, 223	22, 860, 946	40. 06
1877	33, 100, 000	11, 102, 000	3, 327, 605	47, 599, 605	13, 123, 276	27. 57
1878	64, 952, 250	11, 005, 030	3, 752, 987	79, 710, 267	24, 180, 901	30. 34
1879	57, 617, 700	11, 751, 400	4, 108, 370	73, 577, 470	25, 141, 933	34. 17
1880	52, 950, 129	17, 297, 337	4, 504, 268	74, 751, 734	30, 071, 931	40. 23
1881	45, 948, 100	18, 821, 750	4, 900, 166	69, 670, 016	49, 482, 824	71. 02
1882	49, 729, 331	17, 447, 358	5, 296, 263	72, 472, 952	34, 813, 778	48. 04
1883	50, 984, 647	18, 375, 736	6, 418, 703	75, 779, 086	30, 881, 838	40. 75
1884	67, 829, 134	22, 366, 472	7, 554, 551	97, 750, 157	33, 178, 577	33. 94

NOTE.—The data of cereal production for the years 1849, 1859, and 1869 are derived from the United States census, and for other years from reports of the Department of Agriculture. The product of Washington Territory for the years from 1870 to 1878, inclusive, and for 1880 and 1881 has been estimated.

The quantity of cereals of each kind produced in California, Oregon, and Washington Territory during the year 1884 was as follows:

Cereals.	Bushels.
Wheat	63, 900, 000
Corn	5, 069, 000
Rye	360, 706
Oats	10, 242, 000
Barley	18, 140, 936
Buckwheat	37, 515
Total	97, 750, 157

From this it appears that of the total number of bushels of grain produced on the Pacific slope during the year 1884 65.37 per cent. consisted of wheat, 18.56 per cent. of barley, and 5.18 per cent. of corn. Of the total wheat crop of California, Oregon, and Washington Territory for the year 1883, amounting as above stated to 52,627,100 bushels, there was produced in California 36,322,000 bushels, or 69 per cent.; in Oregon 13,122,400 bushels, or 25 per cent., and in Washington Territory 3,182,700 bushels, *or 6 per cent.*

THE FOREIGN COMMERCE OF THE PACIFIC COAST.

The earliest record of the foreign commerce of the Pacific coast of the United States was for the year ended June 30, 1851, during which the value of imports amounted to $13,530. The earliest record of exports therefrom was for the year 1854. During that year the value of exports was $3,466,222 and of imports $8,456,633; the total value of the foreign commerce of that section was $11,922,855.

But during the year ended June 30, 1884, the value of exports of merchandise was $46,386,284, the value of imports of merchandise was $37,179,530, and the total value of the foreign commerce of that section was $83,565,814.

The total value of the foreign commerce of the several customs districts of the Pacific coast during the year ended June 30, 1884, not including the precious metals, is shown as follows:

Customs districts.	Imports.	Exports.	Total.
	Dollars.	*Dollars.*	*Dollars.*
San Francisco, Cal	35, 857, 698	37, 050, 598	72, 908, 296
Oregon, Oreg	168, 341	2, 519, 965	2, 688, 306
Willamette, Oreg	657, 145	4, 383, 498	5, 040, 643
San Diego, Cal	135, 889	127, 966	263, 855
Puget Sound, Wash	137, 971	1, 954, 581	2, 092, 552
Humboldt	6, 373	224, 464	230, 837
Wilmington	216, 113	125, 212	341, 325
Total	37, 179, 530	46, 386, 284	83, 565, 814

The value of the foreign commerce of the Pacific coast with the several foreign countries during the year ended June 30, 1884—merchandise only—is shown as follows:

Countries.	Imports.	Exports.	Total.
	Dollars.	*Dollars.*	*Dollars.*
Belgium	192, 018	1, 866, 806	2, 058, 824
Brazil	46, 657	.....	46, 657
Central American States	1, 885, 133	1, 032, 531	2, 917, 664
Chili	245, 744	213, 838	459, 582
China	6, 853, 891	788, 877	7, 642, 768
France	679, 031	854, 886	1, 533, 917
French possessions, all other	408, 090	436, 719	844, 809
Germany	446, 104	68, 776	514, 880
Great Britain and Ireland	3, 730, 397	28, 434, 965	32, 165, 362
British Columbia	1, 283, 931	2, 502, 954	3, 786, 885
British East Indies	1, 703, 003	15, 742	1, 718, 745
Hong-Kong	211, 036	2, 410, 987	2, 622, 023
British possessions in Australia	1, 641, 768	1, 738, 372	3, 380, 140
Hawaiian Islands	7, 925, 925	3, 109, 697	11, 035, 622
Italy	80, 843	.....	80, 843

Countries.	Imports.	Exports.	Total.
	Dollars.	*Dollars.*	*Dollars.*
Japan	8,093,680	398,373	8,492,053
Mexico	471,661	1,634,002	2,105,663
Dutch East Indies	192,668	6,396	199,064
Peru	49,679	127,471	177,150
Azore, Madeira, and Cape Verde Islands	.....	129,793	129,793
Russia, Asiatic	70,809	139,377	210,186
Spain	27,918	.....	27,918
Spanish possessions, all other	686,867	19,021	705,888
United States of Colombia	.....	298,311	298,311
All other countries and ports in South America	39,570	15,785	55,355
All other islands and ports	213,107	142,605	355,712
Total	87,179,530	46,386,284	83,565,814

The commerce of the Pacific coast with the countries of Europe with respect to merchandise, during the year ended June 30, 1884, constituted 43.5 per cent. of the total foreign commerce of that section. Its value was as follows:

Description.	Value.
	Dollars.
Exports of merchandise	31,225,433
Imports of merchandise	5,156,311
Total	36,381,744

As hereinafter shown, the imports of merchandise from China and Japan consisted chiefly of tea and silk, the principal part of which was shipped by rail to points east of the Rocky Mountains.

The trade of the Pacific coast with Europe, in so far as relates to exports, gives employment to a large amount of tonnage, and is carried on almost entirely in sailing vessels, pursuing the voyage around Cape Horn.

The exports of wheat (including wheat flour) from the Pacific coast during the year ended June 30, 1884, were:

To—	Quantity.
	Bushels.
Europe	24,557,767
Elsewhere	5,506,279
Total	30,064,046

The relative importance of the grain exports of California, Oregon, and Washington Territory, as compared with the total exports of grain from all other parts of the country is exhibited in the following table:

Exports of grain, flour, and meal.

Year ended June 30—	Exported from the Pacific coast.	Exported from the States and Territories east of the Rocky Mountains.	Exported from the United States.	Exported from Pacific coast.
	*Bushels.**	*Bushels.*	*Bushels.**	*Per cent.*
1878	12,879,920	176,356,371	189,236,291	6.81
1879	23,804,612	222,806,995	246,111,507	9.62
1880	25,141,933	259,565,974	284,707,907	8.83
1881	30,071,930	253,134,356	283,206,286	10.62
1882	49,482,824	118,578,055	168,060,879	29.44
1883	34,813,777	157,744,859	192,558,636	18.02
1884	30,878,824	136,491,792	167,370,626	18.45

*Estimating flour at 4½ bushels, corn-meal at 4 bushels per barrel, and oat-meal 32 pounds per bushel.

The magnitude of the grain trade of the Pacific coast will perhaps be the more clearly appreciated by comparing it with the cotton trade of the United States. The total weight of the domestic exports of raw cotton during the two years from July 1, 1882, to June 30, 1884, was 2,075,323 tons; the total weight of the exports of wheat and wheat flour from the Pacific coast during the same time was 1,814,815 tons.* From this it appears that the tonnage of the exports of wheat and wheat flour from the Pacific coast alone was only 12.5 per cent. less than the tonnage of the total exports of cotton from the United States for these two years. The total value of the exports of wheat and wheat flour from the Pacific coast during the two years ended June 30, 1884, was, however, only $30,909,480; whereas the value of the exports of cotton from the United States during the same period was $197,015,204, or more than five times as great. This indicates the magnitude of the tonnage of shipping required to transport the surplus wheat product of the Pacific Slope. The foregoing statements clearly illustrate the enormous magnitude of the export trade of the Pacific coast, and the importance of the question as to the diversion of it to transcontinental railroad lines.

The imports from Europe at the ports of the Pacific coast during the year ended June 30, 1884, consisted chiefly of the following commodities, viz: Iron and steel and manufactures thereof, valued at $1,541,809; wine, spirits, and cordials, $263,680; coal, $414,465; manufactures of flax and jute, $245,984; glassware, $264,026; manufactures of wool, $147,476; earthen, stone, and china ware, $241,450. The aggregate value of these commodities amounted to $3,118,890, and constituted 60.49 per cent. of the imports from Europe at the ports of the Pacific coast.

*Tons of 2,240 pounds.

The tonnage of vessels cleared from Pacific coast ports for Europe during the last five years is shown as follows:

Customs districts.	Year ended June 30—				
	1880.	1881.	1882.	1883.	1884.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
San Francisco, Cal	358,031	447.096	706,553	482,055	399,223
Oregon, Oreg	53,596	24,008	118,863	57,499	46,367
Willamette, Oreg	75,732	47,209	52,176	28,865	58,521
San Diego, Cal	730	6,769	8,517	1,663	877
Puget's Sound, Wash	.....	.....	1,271	5,597	1,476
Wilmington, Cal	.....	.....	.....	.....	1,490
Total	488,089	525,082	887,380	575,679	507,954

The conditions under which vessels engage in the commerce of the Pacific coast with Europe are hereinafter set forth somewhat at length in the chapter of this report entitled "The California Grain Fleet."

THE EXPORTATION OF WHEAT FROM THE PACIFIC COAST.

It was not until about the year 1856 that wheat was first exported from California, and not until the year 1869 that it was exported in any considerable quantity from Oregon.

The following table exhibits the wheat exports from California, Oregon, and Washington Territory from 1856 to 1884, inclusive:

Exports of wheat and flour reduced to wheat, from California, Oregon, and Washington Territory during the years ended June 30, 1856, *to* 1884, *inclusive.*

Year ended June 30—	California.	Oregon.	Washington Territory.	Total.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*
1856	548,662	977	1,960	551,599
1857	229,981	450	968	231,399
1858	36,638	243	6,841	43,722
1859	101,619	.....	13,644	115,263
1860	1,208,410	12,416	.....	1,220,826
1861	3,218,665	58,125	.....	3,276,790
1862	1,961,764	*45,055	.....	2,006,819
1863	2,452,164	*8,366	.....	2,460,530
1864	2,552,391	*11,573	.....	2,563,964
1865	235,812	66,406	7,977	310,195
1866	2,834,094	2,968	16,234	2,853,296
1867	6,160,661	59,807	3,137	6,223,605
1868	6,791,692	77,393	9,273	6,878,358
1869	7,267,960	165,375	5,907	7,459,242
1870	9,472,342	115,747	1,868	9,589,957
1871	6,795,431	476,645	2,691	7,274,767

*Including Washington Territory.

Exports of wheat and flour reduced to wheat, from California, &c.—Continued.

Year ended June 30—	California.	Oregon.	Washington Territory.	Total.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*
1872	3,464,959	458,125	5,085	3,923,119
1873	17,156,105	1,079,605	3,531	18,239,241
1874	14,206,658	2,139,149	22,343	16,368,150
1875	16,527,800	2,872,007	48,962	19,448,769
1876	11,605,632	3,437,235	53,325	15,096,192
1877	19,207,991	3,023,583	68,272	22,299,846
1878	8,534,558	3,897,835	62,307	12,494,700
1879	19,101,318	3,830,234	49,345	22,980,897
1880	19,944,257	4,207,021	24,602	24,175,880
1881	25,329,265	3,736,679	33,278	29,099,222
1882	40,491,081	8,528,888	163,458	49,183,427
1883	29,217,067	4,547,628	446,027	34,210,722
1884	24,457,763	5,384,315	221,968	30,064,046

It appears from this table that the surplus wheat product of the Pacific Slope has increased very rapidly since the year 1872. Of the total quantity exported during the year ended June 30, 1884, 81.4 per cent. was exported from California, 17.9 per cent. from Oregon, and about 0.7 per cent. from Washington Territory. A considerable proportion of the surplus product of Washington Territory is, however, exported at the port of Portland, Oreg., and is embraced in the exports of that State.

The foregoing table, showing exports of wheat to foreign countries, represents quite fully the increase in the surplus wheat product of California.

CHARACTER OF THE INDUSTRIES OF CALIFORNIA, OREGON, AND WASHINGTON TERRITORY.

The following statement exhibits the general distribution of employments on the Pacific coast according to the classification adopted in the census of 1880:

The following table gives the percentage of the persons employed during the census year of 1880 who were occupied as farmers or farm laborers, in professional and personal services, in trade and transportation, and in manufacturing, mechanical, and mining occupations, respectively, showing the relative proportion in the whole country, in the Southern States, in the New England States, in the Middle States, and in the Western and Northwestern States and Territories, also in California, Oregon, and Washington Territory:

In—	Farmers and farm laborers.	Professional and personal services.	Trade and transportation services.	Manufacturing, mechanical, and mining occupations.
	Per ct.	*Per ct.*	*Per ct.*	*Per cent.*
The whole country	44.1	23.4	10.4	22.1
The New England States	17.2	22.3	13.4	45.1
The Southern States	64.6	19.6	6.3	9.5
The Middle States	19.7	29.3	15.7	35.3
The Western and Northwestern States and Territories	44.2	24.2	10.7	20.9
California	21 1	32.3	15.2	31.4
Oregon	40.2	24.7	9.1	26.0
Washington Territory	42.4	22.1	11.3	24.2

THE SHIP-BUILDING INTERESTS OF THE PACIFIC COAST.

The following table exhibits the progress of ship-building on the Pacific coast:

Tonnage of vessels built in the States of California, Oregon, and Washington Territory, during each year ended June 30, from 1869 to 1884, inclusive.

Year.	California.	Oregon.	Washington.	Total.
	Tons.	*Tons.*	*Tons.*	*Tons.*
1869	11,549	1,782	2,048	15,379
1870	10,316	988	1,360	12 664
1871	2,450	2,705	169	5,324
1872	853	959	464	2,276
1873	2,987	1,648	800	5,435
1874	7,081	1,430	2,348	10,859
1875	5,746	4,498	3,184	13,428
1876	8,557	5,926	2,309	16,792
1877	4,785	4,941	2,993	12,719
1878	5,824	4,865	637	11,326
1879	3,860	6,356	966	11,182
1880	5,795	2,466	682	8,943
1881	4,556	4,331	2,531	11,418
1882	6,998	4,836	3,937	15,771
1883	9,047	3,740	3,951	16,738
1884	4,992	1,290	2,230	8,512
Total	95,396	52,761	30,609	178,766

THE SHIPPING INTERESTS OF THE PACIFIC COAST.

The following table exhibits the growth of the navigation interests of the Pacific coast:

Tonnage of vessels belonging to the States of California, Oregon, and Washington Territory during each year ended June 30, from 1869 to 1884, inclusive.

Year.	California.	Oregon.	Washington.	Total.
	Tons.	*Tons.*	*Tons.*	*Tons.*
1869	148,776	10,972	24,827	184,575
1870	156,788	16,712	22,525	196,025
1871	133,301	9,201	24,553	167,055
1872	141,314	14,685	24,082	180,081
1873	147,866	19,828	23,279	190,973
1874	166,424	20,496	24,342	211,272
1875	181,287	23,479	24,209	228,975
1876	204,535	25,815	22,900	253,250
1877	190,076	32,373	28,927	251,376
1878	183,286	37,079	31,001	251,366
1879	200,319	38,492	29,954	268,765
1880	202,114	39,658	29,030	270,802
1881	202,907	43,501	38,018	284,426
1882	211,126	52,569	37,072	300,767
1883	230,168	52,995	43,782	326,945
1884	233,440	50,798	49,950	334,188

CALIFORNIA.

The growth of the population of California is shown as follows:

Year.	Population.
1850	92,597
1860	379,994
1870	560,247
1880	864,694
1884	*1,000,000

*Estimated.

The population in 1880 with respect to race was as follows:

Race.	Population.
White	767,181
Colored	6,018
Chinese	75,132
Japanese	86
Civilized Indians	16,277
Total	864,694

Of the total population in 1880 there were 571,820, or 66 per cent. born in the United States, and 292,874, or 34 per cent. of foreign birth. Of the total population only 325,980, or 38 per cent. were born in California, a fact which in connection with the growth of the State during the last twenty years shows its great attractiveness to immigrants, long after the gold mania had subsided.

The growth of the population of San Francisco, the commercial metropolis of the Pacific coast, is shown as follows:

Year.	Population.
1850	34,776
1860	56,802
1870	149,473
1880	233,959
1884	280,000

San Francisco was, in 1880, the ninth city in magnitude of population in the United States.

The relative value of the principal agricultural and mineral products of California, during the latest year for which all the data can be collected, was as follows:

Articles.	Quantity.	Estimated value.
Cereals, 1884:		*Dollars.*
Wheat.....bushels..	44,320,000	31,910,400
Barley.....do ..	16,217,366	8,433,030
Corn.....do ..	4,800,000	2,880,000
Oats.....do ..	2,149,000	816,620
Rye.....do ..	314,381	213,779
Buckwheat.....do ..	28,387	17,032
Total.....do ..	67,829,134	44,270,861
Gold and silver, 1884.....	.....	16,600,000
Wool, 1883.....pounds..	40,848,700	7,500,000
Fruit do	.....	4,750,000
Wine do .....gallons..	9,000,000	4,680,000
Canned goods, fruits, &c, 1883.....	.....	4,500,000
Butter..... do .....pounds..	16,000,000	4,000,000
Dried fruit ..... do	.....	1,500,000
Eggs..... do .....dozens..	5,000,000	1,500,000
Quicksilver ..... do .....pounds..	3,574,462	1,284,038
Cheese ..... do ..... do	8,000,000	1,000,000

Besides the commodities mentioned in this table, there are many other important products of the agricultural, manufacturing, and mining industries of California, but the limits which must necessarily be placed upon this report require that attention be confined to the commodities here mentioned, since *they constitute* the principal exports of the State,

in her trade with the other States of the Union and with foreign countries.

The following table compiled from the census gives the total number of farms, the acreage of land in farms, the acreage of improved land in farms, the value of farms, and the value of farming implements and machinery in California in 1850, 1860, 1870, and 1880:

Year.	Number of farms.	Acreage of land in farms.	Acreage of improved land in farms.	Value of farms.	Value of farming implements and machinery.
		Acres.	*Acres.*	*Dollars.*	*Dollars.*
1850	872	3,893,985	32,454	3,874,041	103,483
1860	18,716	8,730,034	2,468,034	48,726,804	2,558,506
1870	23,724	11,427,105	6,218,133	141,240,028	5,316,690
1880	85,934	16,593,742	10,669,698	262,051,282	8,447,744

This table exhibits very strikingly the wonderful development of the agricultural resources of the State of California. The acreage under cultivation increased from 32,454 in 1850 to 10,669,698 in 1880, and the value of farms increased from $3,874,041 in 1850 to $262,051,282 in 1880.

Since immigration was first attracted to California by the mineral resources of that State, great changes have taken place in her commercial interests as the result of this wonderful development of her agricultural resources. Already she has become, in proportion to population and wealth, one of the leading States with respect to the production and exportation of agricultural products.

The most important of the agricultural products of California, as shown in a preceding table, are the cereals, hay, wool, and fruit.

The surplus wheat product of the State is shipped almost exclusively to Europe in sailing vessels pursuing the voyage around Cape Horn. This constitutes the most important feature of the commerce of the Pacific slope. This subject was treated of somewhat at length in the report of this office for the year 1883, wherein is discussed the practicability of diverting a portion at least of the surplus wheat product from the route mentioned to the transcontinental rail lines which, in connection with vessels plying between the eastern termini of those lines and ports in Europe, constitute shorter routes and afford the advantages of much more expeditious transport.

The fruits, wines, and spirits of California are, on account of their peculiar and excellent qualities, in great demand throughout the States situated east of the Rocky Mountains. By virtue of the high value of these products in proportion to weight and bulk they are transported to the markets of this country chiefly by rail. They now constitute a large and remunerative transcontinental railroad traffic. During the year 1884 there were 38,949,000 pounds, or 19,474 tons, of fruit in the

various forms of canned fruit, dried fruit, green fruit, and raisins shipped east over the Central Pacific Railroad.

The president of the Board of State Viticultural Commissioners of California estimates the overland shipments of wine in 1882 at 1,451,552 gallons, and of brandy at 169,410 gallons. The total vintage of the State in 1880 was about 12,000,000 gallons; in 1881, about 9,000,000; in 1882, about 10,000,000; in 1883, about 9,000,000 and in 1884 about 15,000,000.

The last annual report of the Central Pacific Railroad Company shows that there were 20,856,600 pounds, or 10,428 tons, of wine and brandy shipped east during the year 1883; also that there were during the same year 34,210,050 pounds, equal to 17,105 tons, of wool, shipped east over the line of that company.

THE CEREAL PRODUCT OF CALIFORNIA.

The total cereal product of California, as shown in a former table, increased from 12,026,637 bushels in 1859 to 49,729,331 bushels in 1882. The quantity of cereals of each kind produced during the year 1884 was as follows:

Cereals.	Bushels.	Cereals.	Bushels.
Wheat	44,320,000	Barley	16,217,366
Corn	4,800,000	Buckwheat	28,387
Rye	314,381	Total	67,829,134
Oats	2,149,000		

Wheat.

The wheat crop of California being by far the most important product of the State, the following facts in regard to its magnitude, value, and movements during a period of years are of special interest in this connection:

The acreage under wheat culture in California during each year for the last six years has been, according to reports of United States Agricultural Department, as follows:

Year.	Acreage.	Yield (tons of 2,000 pounds).
1879	2,500,000	1,050,000
1880	2,117,350	1,016,328
1881	2,367,200	942,180
1882	2,767,000	1,081,398
1883	2,794,000	1,089,660
1884	3,360,000	1,329,600

In the opinion of Messrs. White & Lessak, grain brokers, of San Francisco, *who have made a special* study of the subject of wheat cult-

ure, the future increase of acreage in wheat will be from 10 to 12 per cent. per annum for many years.

The average yield of wheat throughout the State is from 15 to 20 bushels per acre, the production depending principally upon the amount of rainfall.

The production of wheat in California by counties is exhibited in Appendix No. 57. It appears from this statement that of the 3,076,659 acres under wheat culture, during the year 1882, 1,177,380 acres, or 38.3 per cent., were situated in interior counties north of the intersection of the San Joaquin and Sacramento Rivers; 1,174,423 acres, or 38.1 per cent., in interior counties south of the intersection of the two rivers just mentioned; and 724,856 acres, or 23.6 per cent., in counties situated on the western slope of the Coast Ranges.

The growth of wheat culture in California is clearly shown in the following table:

Wheat crop of California of 1859 *and of* 1869 *to* 1884, *inclusive.*

[Data for 1859 from United States census for remaining years, from reports of Commissioner of Agriculture.]

Years.	California.		Years.	California.	
	Bushels.	Value.		Bushels.	Value.
		Dollars.			*Dollars.*
1859	5,928,470	No data.	1877	22,000,000	28,600,000
1869	20,000,000	18,600,000	1878	41,990,000	43,249,700
1870	14,175,000	15,592,500	1879	35,000,000	43,050,000
1871	16,757,000	23,627,370	1880	33,877,600	32,522,496
1872	25,600,000	28,416,000	1881	34,406,000	32,348,180
1873	21,504,000	28,385,280	1882	36,046,600	32,441,940
1874	28,380,000	28,096,200	1883	36,322,000	36,322,000
1875	23,800,000	28,084,000	1884	44,320,000	31,910,400
1876	30,000,000	34,200,000			

As shown in the last annual report of this office on internal commerce, the transportation of wheat overland, by rail, either for consumption in the United States or for export to foreign countries has been attempted only in an experimental way, or in comparatively small quantities, to meet exceptional requirements.

The production of wheat being stated by calendar years, and the exportation by years ended June 30, it is impossible to state precisely the proportion of each crop exported. By comparing the exports with the production during the last five years stated in the foregoing tables it appears that about 78 per cent. of the wheat raised in California during that time has been exported.

The increased exportation of flour from California to foreign countries is indicated by the fact that there were only 340,736 barrels, valued at $1,644,944, exported during the year ended June 30, 1870, whereas

1,234,820 barrels, valued at $5,957,812, were exported during the year ended June 30, 1884.

The exports of wheat and wheat flour from the Pacific coast during the year ended June 30, 1883, amounted to 30.7 bushels per capita of the population of that section, according to the census of 1880, whereas the exports of wheat and wheat flour from the remaining portions of the country amounted to only 2.3 bushels per capita of population.

The distribution of the surplus wheat product of California is indicated by the following statement showing the countries to which wheat was exported during the year ended June 30, 1884. Flour reduced to bushels, at the rate of 4½ bushels to the barrel, is also embraced in this table:

Exports of wheat, including wheat flour from California to the various foreign countries during the year ending June 30, 1884.

Countries to which exported.	Wheat (including wheat flour).	
	Bushels.	*Dollars.*
Great Britain	19,757,772	20,434,333
Belgium	1,599,837	1,575,200
Hong-Kong	1,246,284	1,275,802
France	798,093	810,445
Central American States	394,739	451,269
Hawaiian Islands	173,062	195,609
Azore, Madeira, and Cape Verde Islands	129,605	129,113
United States of Colombia	103,873	118,152
British Columbia	61,430	62,361
Japan	45,847	55,102
French possessions, all other	49,610	54,886
Russia, Asiatic	36,414	40,873
China	31,397	39,717
Mexico	12,602	14,403
Spanish possessions, all other	9,167	10,508
All other countries and ports in South America	1,107	1,273
British possessions in Australasia	1,174	1,326
Peru	675	720
Dutch East Indies	450	528
British East Indies	225	317
Germany	59	70
All other islands and ports	4,341	5,038
Total	24,457,763	25,277,045

From the foregoing table it appears that 90.6 per cent. of the wheat and wheat flour exported from California during the year ended June 30, 1884, was shipped to Europe, 80.8 per cent. of which was to Great Britain. Such shipments were almost entirely made in sailing vessels pursuing the voyage around Cape Horn. Although the distance from San Francisco to Liverpool via Panama is only 9,138 statute miles as against 15,793 *miles by the steamer* route via Cape Horn, yet wheat has *never been transported via the Isthmus*. The latter route is not, in

practice, regarded as a competitor of the Cape Horn route, nor does it exert any effective regulating influence over rates by that route. The Panama route would involve two transfers of cargo, the uncertainties as to facilities for transportation on the Atlantic side of the Isthmus, and the serious difficulties which would be encountered with respect to the navigation of sailing vessels through the calm belt west of the Isthmus of Panama.

One of the conditions which render practicable the transportation of wheat from the Pacific coast to ports in Europe by the route around Cape Horn is the fact that wheat produced in the States of California and Oregon is so dry and hard that it can be transported twice across the equator without injury, upon a voyage requiring from four to five months.

The following statement, showing the average rates of wages of farm laborers in Wisconsin, Minnesota, Iowa, Nebraska, California, and Oregon for the year 1882, has been kindly furnished by Mr. J. R. Dodge, statistician of the Department of Agriculture. No later data upon the subject have been compiled.

Average monthly rate of wages, by the year, for 1882, in the following-named States.

States.	Without board.	With board.	States.	Without board.	With board.
	Dollars.	*Dollars.*		*Dollars.*	*Dollars.*
Wisconsin	26 21	17 90	Nebraska	24 45	16 20
Minnesota	26 36	17 75	California	38 25	23 45
Iowa	26 21	17 95	Oregon	33 50	24 75

From this it would appear that the average monthly wages of farm laborers in the States of Wisconsin, Minnesota, Iowa, and Nebraska during the year mentioned were $17.45, and that the average monthly wages of such laborers in California and Oregon were about $24.10. In other words, the wages of farm laborers on the Pacific coast were about 38 per cent. in excess of the wages of such laborers in our Western and Northwestern States east of the Rocky Mountains.

It is believed, however, from testimony received as to the amount of labor required in the production of a given quantity of wheat in California, that the average cost of such production is less than in the States and Territories situated east of the Rocky Mountains.

Barley.

The barley crop of California is the second cereal crop in magnitude. The quantity and value of the crops of this grain produced in California, Oregon, and Washington Territory, for a period of years, are shown in the following table:

The barley crop of California, Oregon, and Washington Territory for 1859, *and* 1869 *to* 1883.

[Data for 1859 and 1869 taken from the Census; for remaining years from Reports of Department of Agriculture.]

Years.	California.		Oregon.		Washington Territory.	
	Bushels.	Value.	Bushels.	Value.	Bushels.	Value.
		Dollars.		*Dollars.*		*Dollars.*
1859	4,415,426		26,254		4,621	
1869	12,285,000	7,985,250	200,000	120,000	55,787	
1870	7,378,000	7,230,440	202,000	137,360		
1871	7,287,000	7,869,960	206,000	173,040		
1872	7,359,000	6,235,150	243,000	145,800		
1873	10,213,991	8,681,892	364,000	189,280		
1874	11,031,000	8,604,180	371,000	204,050		
1875	9,050,000	8,235,500	450,000	315,000		
1876	11,800,000	8,142,000	540,000	367,200		
1877	7,800,000	7,020,000	480,000	340,800		
1878	14,950,000	9,717,500	370,300	229,586		
1879	14,501,500	8,120,840	480,000	307,200	566,537	
1880	14,720,245	8,979,349	676,830	453,476		
1881	10,146,000	7,812,420	745,000	432,100		
1882	9,131,400	6,118,038	819,500	491,700	651,518	443,032
1883	10,135,854	6,385,588	885,960	575,289	671,064	422,770
1884	16,217,366	8,433,030	1,239,084	582,369	684,486	308,019

NOTE.—The cereal products of the separate Territories cannot be given prior to 1882, except for the census years.

From the foregoing table it appears that the total barley crop of the Pacific coast amounted, during the year 1883, to 11,691,978 bushels, of which 10,135,854 bushels or 86.68 per cent. was produced in California.

The exports of barley from San Francisco to foreign countries amounted during the year ended June 30, 1884, to 639,141 bushels, the value of which was $337,083. During the same year the value of the exports of wheat and wheat flour was:

Wheat	$19,146,784
Wheat flour	5,957,401
Total	25,104,185

Barley has for several years been shipped by rail in limited and variable quantities to points east of the Rocky Mountains, and chiefly to Chicago. Such shipments have been made mainly by eastern brewers for their own use in the manufacture of beer.

THE MANUFACTURING INDUSTRIES OF CALIFORNIA.

The data in regard to the value of products, value of materials, and amount of wages paid in the manufacturing industries of California are exhibited as follows:

Statement exhibiting in the order of magnitude of value of product the manufactures of California, together with the value of materials and the amounts paid in wages, according to the census of 1880.

Articles.	Amounts paid in wages.	Value of materials.	Value of products.
	Dollars.	*Dollars.*	*Dollars.*
Flouring and grist mill products	514, 602	11, 067, 847	12, 701, 477
Slaughtering and meat packing	341, 488	6, 149, 623	7, 953, 914
Sugar and molasses, refined	190, 000	5, 517, 000	5, 932, 000
Foundry and machine-shop products	1, 528, 523	2, 403, 229	4, 797, 282
Lumber, sawed	1, 095, 736	2, 242, 503	4, 428, 950
Clothing, men's	959, 534	2, 318, 655	3, 992, 209
Tobacco, cigars, and cigarettes	956, 639	2, 060, 275	3, 947, 353
Liquors, malt	570, 624	2, 144, 119	3, 862, 431
Leather, tanned	344, 017	2, 746, 263	3, 738, 723
Boots and shoes	1, 064, 938	2, 022, 487	3, 649, 551
Printing and publishing	1, 272, 412	1, 054, 355	3, 148, 978
Bread and other bakery products	372, 171	1, 611, 080	2, 416, 398
Bags, other than paper	233, 585	1, 715, 000	2, 102, 500
Leather, curried	132, 629	1, 683, 021	2, 001, 850
Furniture	505, 089	1, 003, 555	1, 857, 010
Ship-building	589, 564	959, 349	1, 797, 639
High explosives	86, 506	780, 416	1, 765, 868
Woolen goods	334, 318	997, 539	1, 634, 858
Tin ware, copper ware, and sheet-iron ware	402, 996	852, 051	1, 622, 632
Sash, doors, and blinds	442, 560	831, 466	1, 541, 260
Coffee and spices, roasted and ground	113, 032	1, 123, 153	1, 424, 878
Fruits and vegetables, canned and preserved	291, 413	832, 952	1, 389, 798
Soap and candles	129, 780	886, 706	1, 193, 494
Saddlery and harness	305, 575	587, 623	1, 170, 868
Carriages and wagons	379, 629	460, 095	1, 163, 618
Clothing, women's	221, 267	660, 232	1, 152, 600
Lead, bar pipe, sheet, and shot	87, 952	826, 500	948, 000
Lumber, planed	164, 848	530, 228	850, 395
Iron and steel	177, 722	535, 500	780, 000
Furnishing goods, men's	126, 265	509, 540	744, 245
Confectionery	83, 723	472, 876	721, 797
Cooperage	213, 656	354, 170	721, 034
Marble and stone work	231, 817	319, 904	710, 546
Bridges	172, 970	374, 000	694, 000
Liquors, distilled	51, 653	424, 252	637, 298
Drugs and chemicals	91, 639	206, 621	623, 041
Liquors, vinous	72, 307	292, 075	622, 087
Boxes, wooden packing	137, 100	315, 300	600, 700
Cheese and butter	70, 434	339, 934	590, 434
Agricultural implements	149, 995	334, 035	586, 338
Cordage and twine	57, 215	402, 115	545, 230
Brick and tile	210, 033	157, 625	516, 261
Oil, linseed	30, 000	400, 000	461, 000

Statement exhibiting the manufactures of California, &c.—Continued.

Articles.	Amounts paid in wages.	Value of materials.	Value of products.
	Dollars.	*Dollars.*	*Dollars.*
Upholstering	96,037	256,507	459,042
Millinery and lace goods	78,932	305,900	456,300
Leather, dressed skins	21,248	401,500	453,000
Grease and tallow	14,240	364,400	417,200
Paints	41,576	300,239	406,326
Gunpowder	37,200	137,800	390,000
Paper, not specified	87,622	241,015	386,197
Bookbinding and blank-book making	112,578	173,730	386,140
Brass castings	121,400	235,520	384,850
Jewelry	100,597	159,753	315,115
Shirts	85,338	154,990	304,850
Wirework	42,665	196,910	298,776
Looking-glass and picture frames	59,150	137,553	285,703
Roofings and roofing materials	91,521	121,320	273,275
Gloves and mittens	77,250	134,225	265,100
All other industries	4,490,593	7,691,098	16,996,091
Total	21,065,905	72,607,709	116,218,979

THE CUSTOMS DISTRICTS AND FOREIGN COMMERCE OF CALIFORNIA.

There are four customs districts in California, viz, San Francisco, San Diego, Humboldt, and Wilmington. The customs district of San Francisco was created by the act of September 28, 1850. As changed by the act of June 16, 1882, it comprises all the waters and shores of the State north of the counties embraced in the district of Wilmington and south of the county of Humboldt. San Francisco is the port of entry of this district, and San Luis Obispo and Vallejo are ports of delivery.

The customs district of San Diego was created by the act of March 3, 1873, and as changed by act of June 16, 1882, comprises all the waters and shores of the county of San Diego. San Diego, on the bay of San Diego, is the port of entry of this district.

The customs district of Humboldt was created by the act of June 16, 1882, and comprises all the waters and shores of the counties of Humboldt and Del Norte. Eureka, in the bay of Humboldt, is the port of entry of this district, and Crescent City is a port of delivery.

The customs district of Wilmington was created by the act of June 16, 1882, and comprises all the waters and shores of the counties of Santa Barbara, Ventura, Los Angeles, and San Bernardino. Wilmington, on the Bay of Wilmington, is the port of entry of this district, and Santa Barbara, San *Buena Ventura*, and Hueneme are ports of delivery.

The foreign commerce of California is carried on almost exclu at San Francisco. This is shown as follows:

Value of the foreign commerce of California during the year ended June 30, 18

MERCHANDISE.

Customs districts.	Imports.	Exports.	
	Dollars.	*Dollars.*	*I*
San Francisco	35, 857, 698	37, 050, 598	7
Wilmington	216, 113	125, 212	
San Diego	125, 889	127, 966	
Humboldt	6, 373	224, 464	
Total	36, 216, 073	37, 528, 240	7

Appendix No. 63 embraces the statistics of the foreign comme California during each year from 1851 to 1854, inclusive. The fir cord of imports is for the year 1851, when the value thereof amo to $13,531. The first record of exports is for the year 1853. value of the commodities exported during that year, including s amounted to $555,453. In the year 1860 the value of the impc merchandise was $7,369,963, and the value of the exports was $4,86 but during the year ended June 30, 1884, the value of the impc merchandise was $36,216,073, and the value of the exports $37,528,240.

The following table exhibits, in the order of magnitude, the dor exports of the principal and all other articles of merchandise from fornia to foreign countries during the year ended June 30, 1884:

Articles.	V
Breadstuffs:	*D*
Wheat and wheat flour	2
Other breadstuffs	
Total breadstuffs	2
Iron and steel, and manufactures of	1
Wood, and manufactures of	1
Cotton, and manufactures of	1
Fish	1
Chemicals, drugs, dyes, and medicines	
Provisions, comprising meat and dairy products	
Quicksilver	
Fruits	
Leather, and manufactures of	
Animals, live	
Gunpowder and other explosives	
Wool, and manufactures of	
All other articles	1
Total domestic exports	3

The value of the principal and other imports of merchandise into California from foreign countries during the year ended June 30, 1884, was as follows:

Articles.	Value.
	Dollars.
Silk, raw, or as reeled from the cocoon	7,956,008
Sugar, brown	7,949,626
Tea	3,595,646
Coffee	2,012,221
Coal, bituminous	1,820,887
Flax, hemp, jute, and manufactures of	1,765,101
Rice	1,676,400
Iron and steel, and manufactures of	1,393,095
Chemicals, drugs, and dyes	863,148
Wool, and manufactures of	697,884
Earthen, stone, and china ware	315,249
All other articles	6,171,808
Total imports	36,216,073

Appendix No. 60 shows the imports and exports of gold and silver at the port of San Francisco during each year from 1856 to 1884.

The relative position of San Francisco with respect to the magnitude of the foreign commerce of the several ports of the United States is indicated by the following table, showing the value of the imports and exports of merchandise at the principal ports of the United States during the year ended June 30, 1884:

Order.	Customs districts.	Imports.	Exports.	Total imports and exports.
		Dollars.	*Dollars.*	*Dollars.*
1	New York	465,119,630	329,883,267	795,002,897
2	Boston and Charlestown	65,865,551	63,497,829	129,363,380
3	New Orleans	10,784,561	81,868,229	92,652,790
4	San Francisco	35,857,698	37,050,598	72,908,296
5	Philadelphia	33,657,216	36,492,568	70,149,784
6	Baltimore	11,423,665	43,079,294	54,502,959
7	Galveston	1,119,708	20,454,948	21,574,656
8	Savannah	652,360	19,947,349	20,599,709
9	Charleston	462,949	16,232,067	16,695,016
10	Huron	2,461,682	13,305,951	15,767,633
11	Norfolk and Portsmouth	223,626	12,353,256	12,576,882
	All other customs districts	40,069,047	66,348,253	106,417,300
	Total	667,697,693	740,513,609	1,408,211,203

From the above table it appears that during the year ended June 30, 1884, San Francisco was the fifth port in the United States in the order of magnitude of exports of merchandise, the third in the order of magnitude of imports, and the fourth in the order of magnitude of total foreign commerce.

The value of the commerce of San Francisco with the several foreign countries during the year ended June 30, 1884, is exhibited as follows:

MERCHANDISE.

Order.	Countries.	Imports.	Exports.	Total.
		Dollars.	*Dollars.*	*Dollars.*
1	Great Britain and Ireland	3,193,610	21,651,111	24,844,72[illegible]
2	Hawaiian Islands	7,911,766	2,779,229	10,690,99[illegible]
3	Japan	8,093,672	398,373	8,492,04[illegible]
4	China	6,820,249	769,403	7,589,65[illegible]
5	Central American States	1,885,133	1,032,531	2,917,664
6	British possessions in Australasia	1,489,919	1,387,278	2,877,197
7	British Columbia	1,053,624	1,415,465	2,469,089
8	Hong-Kong	.....	2,385,216	2,385,216
9	Mexico	341,751	1,535,630	1,877,381
10	Belgium	192,018	1,585,051	1,777,069
11	British East Indies	1,703,003	15,742	1,718,745
12	France	679,031	816,445	1,495,476
13	French possessions, all other	408,090	424,144	832,234
14	Spanish possessions, all other	686,867	19,021	705,888
15	Germany	432,539	68,776	501,315
16	Chili	245,676	46,728	292,404
17	United States of Colombia	.....	271,791	271,791
18	Russia, Asiatic	70,786	139,377	210,163
19	Dutch East Indies	192,668	6,396	199,064
20	Azore, Madeira, and Cape Verde Islands	.....	129,793	129,793
21	Italy	80,843	.....	80,843
22	Peru	49,679	23,471	73,150
23	Brazil	46,657	.....	46,657
24	All other countries in South America	39,092	7,022	46,114
25	Spain	27,918	.....	27,918
	All other islands and ports	213,107	142,605	355,712
	Total	35,857,698	37,050,598	72,908,296

From the foregoing table it appears that the value of the exports of merchandise from San Francisco to Europe amounted to $24,121,383, and constituted 65.1 per cent. of the total value of the exports from that port. The value of wheat and wheat flour exported from San Francisco amounted to $25,104,185, constituting 67.8 per cent. of the total value of the exports of merchandise from that port.

THE NAVIGATION INTERESTS OF CALIFORNIA.

The merchant marine of California on the 30th of June, 1884, consisted of 875 vessels, the aggregate tonnage of which amounted to 233,440 tons. There were engaged in domestic commerce 683 vessels the tonnage of which amounted to 116,074 tons, and in foreign commerce 192 vessels, the tonnage of which amounted to 117,366 tons. There were 39 vessels built in the State during the last fiscal year, the tonnage of which amounted to 6,301 gross tons. The tonnage built consisted entirely of wooden vessels. The total tonnage of vessels entered

at seaports of California from foreign countries during the last fiscal year amounted to 935,459 tons; the tonnage entered at San Francisco amounted to 884,560 tons, or 95 per cent., and the tonnage entered at all other ports amounted to 50,899 tons, or 5 per cent. of the total tonnage entered.

San Francisco was the third sea-port of the United States in the order of magnitude of tonnage entered from foreign countries. This is shown as follows:

Tonnage entered at the principal sea-ports of the United States in the foreign trade during the year ended June 30, 1884.

Order.	Ports.	Tonnage entered.
1	New York	5,658,871
2	Boston	1,186,871
3	San Francisco	884,560
4	Philadelphia	776,927
5	New Orleans	684,231
6	Baltimore	627,344
7	Port Townsend	328,476
8	Pensacola	267,930
9	Eastport	179,932
10	Portland	171,649
	All other ports	1,318,365
	Total	12,085,156

The shipping interests of California are more fully set forth in the following statement in regard to the grain fleet of California:

THE GRAIN FLEET OF CALIFORNIA.*

As the production of wheat on the Pacific coast increased it drew thither many ships of that numerous fleet of sailing vessels of the larger class which pursue a random occupation upon the ocean wherever profitable freights may be secured at the ports of the various commercial nations. Many of these ships, in the ordinary course of their roving voyages, circumnavigate the globe about once a year.

The exports of grain and flour from the Pacific coast during the year ended June 30, 1883, amounted to 999,874 tons of 2,000 pounds, and the exports of grain from California alone amounted to 859,904 tons.

The grain fleet of California numbered 446 vessels during the year 1882, the aggregate tonnage of which was 628,380 tons. Of this entire fleet only three vessels were steamers, all the rest being sailing vessels.

* This chapter was prepared nearly two years ago, for the year 1882, but was never before published. It became necessary to send this report to the printer on the 6th of May, 1885, and it was then impossible to procure the data for the year 1884.

The countries and quarters of the globe from which these vessels last cleared on their voyages to California, and the tonnage from each, are exhibited as follows:

From whence cleared.	Tons.	From whence cleared.	Tons.
British India and the East Indies	6,641	South America	49,416
China and Japan	33,713	South Africa	1,71[illegible]
Australasia	132,939	Eastern coast of the United States	92,30[illegible]
The Hawaiian Islands	5,371	Europe direct	279,04[illegible]
British Columbia	14,981	Total	628,35[illegible]
Coasting voyages	1,332		
Mexico and Central America	10,921		

From this statement it appears that of the total tonnage which cleared from San Francisco during the year 1882 with grain cargoes 279,041 tons, or 44 per cent., came from Europe direct, 173,519 tons, or 27 per cent., from Asia, the East India islands, and Australasia, 92,309 tons, or 14.7 per cent., from the eastern coast of the United States, and 49,416 tons, or 8.8 per cent., from South America. The remaining tonnage, amounting to 34,095 tons, or 5.5 per cent., arrived from British Columbia, the Hawaiïan Islands, Mexico, Central America, South Africa, and domestic ports of the Pacific coast.

Mr. Morris Marcus, secretary of the Chamber of Commerce of San Francisco, estimates the first cost of the California grain fleet of 1882 at $37,700,000, and its present value at $28,275,000. He also estimates that the annual cost of maintaining and operating this fleet, including insurance and interest, at 6 per cent., was $15,089,500. No similar estimate has been made for later years.

The total earnings of the California grain fleet from the transportation of grain, flour, &c., during the year were £2,458,290, or $11,963,268, a sum equal to about four-fifths of the entire expenses of the fleet, including interest, at the rate of 6 per cent., during the year. It is clearly evident, therefore, that the transportation of grain from California to Europe constitutes the chief source of profit of the vessels composing the so-called California grain fleet. The total receipts of vessels for the transportation of grain, flour, &c., from California, Oregon, and Washington Territory during the year 1882 amounted to £3,141,850, or $15,289,813. More than two-thirds of this amount was paid to foreign ship-owners.

The general nature of the business in which the ships comprising the California and Oregon fleet engage in the course of a year may be inferred from the following facts: A large number of them sail from Europe to the Pacific coast with cargoes of coal, pig-iron, tin, and general merchandise. Many of them also take cargoes of general merchandise from England and from ports of Continental Europe to Australia, and thence bring coal to San Francisco, and others again

take coal or general merchandise from ports in Great Britain to Calcutta, Bombay, or Hong-Kong, and thence proceed to San Francisco with light cargoes or "in ballast."

Many American ships return from Europe to Atlantic ports of the United States, and thence carry railroad iron, coal, and general merchandise to the Pacific coast. Under our navigation laws only American vessels can engage in trade between Atlantic and Pacific ports of the United States, it being regarded as a branch of the coastwise or domestic trade of the country. Notwithstanding this advantage enjoyed by American vessels about two-thirds of the vessels engaged in the transportation of grain from the Pacific ports of the United States to Europe sail under foreign flags.

Return freight rates to California are always much less than the outward rates on wheat. For example, coal freights average from 14 to 15 shillings per ton from Great Britain to California, this being only about one-fourth the average rate received for the transportation of wheat from San Francisco to Liverpool during the last twelve years.

One of the most important incidents of the transportation of wheat from California to Europe is the fact that a large number of the vessels engaged in that trade bring coal to San Francisco from Great Britain and Australasia and from the Atlantic coast of the United States at comparatively low rates. Of the total receipts of coal at San Francisco during the year 1882, amounting to 882,896 tons, there was brought from Great Britain 188,771 tons, and from Australia 158,909. The receipts from the eastern coast of the United States amounted to 39,856 tons.

A few of the peculiar features of the transportation of wheat from California to Europe by sea may here be noticed:

First. Such transportation is entirely in bags. This practice seems to have had its origin and to have been continued mainly as the result of the peculiar climatic conditions and transportation facilities of California. Besides, wheat cannot be shipped safely "in bulk" via Cape Horn. Underwriters refuse to insure bulk shipments by that route. The cost of sacking grain is about 4 cents per bushel. There have been 197,005,700 sacks used in the shipment of grain in California during the last eleven years, the total cost of which was $22,029,000, or a little over $2,000,000 per annum.

Second. Many of the vessels engaged in the grain trade of the Pacific coast are chartered prior to their arrival. The time of such charter prior to arrival ranges from a few days to seven months, being governed very largely by the state of the English wheat market and by the probable amount of tonnage to arrive. Many of these vessels are chartered for wheat cargoes from California while pursuing their voyage from England to Australia. Again, many vessels lie in port in Australia, South America, and Asia waiting for the offer of a satisfactory charter. The movements of *all such* vessels are usually directed by telegraph.

The proportion of vessels chartered prior to arrival at Pacific coast ports varies from year to year. In 1880 about one-third of the grain fleet was thus chartered in advance of arrival, in 1881 about two-thirds and during 1882 less than one-sixth.

Third. The shipment of wheat from the Pacific coast to Europe in sailing vessels has its peculiar speculative features with respect both to freight and cargo. A ship chartered several months in advance of her arrival at San Francisco must, of course, carry grain at the charter rate. The charter may, however, have been transferred one or more times prior to her arrival. It is stated upon good authority that in years past a very considerable proportion of the profits made or losses of grain shippers incurred in San Francisco have been the result of the chartering of vessels to arrive. This speculative feature of transportation by sea would not, of course, attach to transportation by railroad across the continent, in connection with carriage from an Atlantic or Gulf port terminus of such railroad to Europe in sea-going vessels, as the railroad upon which it might be shipped would probably enter into arrangements with vessel-owners whereby published through rates would be made, thus to a great extent eliminating the doubt which now exists as to the rates which can be secured from day to day at San Francisco upon particular shipments.

California wheat cargoes are also the subject of speculation during the entire voyage from San Francisco to Europe—a voyage which occupies on the average between four and five months. Such cargoes are frequently bought and sold several times while on the passage to Europe, and they are therefore in the market during the entire voyage. This is, of course, much more promotive of speculation in the grain trade than is grain which speedily passes from the producer or first purchaser to the final purchaser or the miller, who in the ordinary course of commercial transactions stands nearest to the consumer. At times, owing to the markets of Europe being glutted, wheat to arrive four or five months hence commands a considerable higher price than wheat on hand, as a result of dealing "in futures."

Opinions seem to differ with personal interests upon the question as to whether the long voyage is or is not promotive of the commercial and agricultural interests of the Pacific Coast States. It appears probable that those interests will be best promoted by the option of the present slow mode of transportation or one more rapid and more regular, whereby grain can be shipped in bulk. The primary conditions of chief importance which govern the rates charged for the transportation of wheat by sea from San Francisco and also from the ports of Oregon to Europe are the state of the European grain market, the magnitude of the wheat crop of the Pacific coast, and the abundance or scarcity of freights in the various commercial ports of the globe. The uncertainty arising from all these conditions affords the occasion for the speculation in grain transactions and also in the chartering of vessels.

One of the incidental advantages of the slower mode of transportation which must be mentioned is that it affords the facilities of transportation as well as of warehousing, both of which facilities are necessary in the transfer of a grain crop from its producers to its consumers.

INLAND NAVIGATION OF CALIFORNIA.

The inland navigation of California is confined almost entirely to San Francisco Bay, San Pablo Bay, Suisun Bay, and the two principal rivers emptying into these bays, viz, the Sacramento River and the San Joaquin River. The bays mentioned are navigable for sea-going vessels of the largest class, but neither of the rivers mentioned is navigable for such vessels. (See Map No. 5.)

The Sacramento River is navigable for steamers and barges of light draught during all seasons of the year, to a point about 250 miles from its mouth, and also considerably beyond that point during the brief periods of the spring freshets. The San Joaquin River is navigable at all times for barges and steamers, as far up as Stockton, an important grain center. During the stages of highest water, caused by the heavy rainfalls late in the autumn months, and by the melting of snows in the mountains in the spring, steamers are enabled to ascend as far as Fresno County, a distance of about 200 miles from the mouth of the river.

There are six shipping ports on San Francisco Bay and adjacent waters, at which sea-going vessels are loaded with grain, namely, San Francisco, Oakland, Port Costa, Wheatport, Vallejo, and Benicia. The principal of these shipping ports is Port Costa, on the Strait of Carquinez, near San Pablo Bay. During the year 1884 more than half of the ships carrying grain were loaded at this port, about one-fourth at San Francisco, 11 per cent. at Vallejo, and the principal part of the remainder at Benicia, a few ships loading at Oakland and Wheatport. The following statement shows the quantity of wheat, flour, and barley loaded at each of these ports during the calendar year 1884:

Port.	Centals.	Port.	Centals.
Port Costa	7,430,061	Oakland	192,510
San Francisco	3,787,982	Wheatport	46,699
Vallejo	1,567,519		
Benicia	1,295,670	Total	14,320,441

NOTE.—Flour reduced to wheat at the rate of 3 centals of wheat to a barrel of flour.

The quantity of wheat brought from the less important shipping points on San Francisco Bay and adjacent bays and the rivers emptying into those bays, other than the San Joaquin and Sacramento Rivers, cannot be accurately ascertained. During the year 1884 there were brought to shipping ports 613,281 tons of wheat and other grain by the Central Pacific Railroad and its branch lines.

The grain produced in California near navigable waters is principally transported to shipping ports by water.

It is said that wherever rail and water lines come into direct competition with each other in the interior of the State, the rates by water are generally about one-third lower than those by rail.

The question as to the differences which shall prevail with respect to rail mileage rates to shipping ports from points where there is water competition, and from points at which there is no water competition, constitutes one of the most important questions connected with the railroad problem of California. This subject is discussed at some length in the various reports of the Commissioners of Transportation, and of the Board of Railroad Commissioners of California, in their several reports to the legislature of the State.

GRAIN TRANSPORTATION.

About two-thirds of the wheat received at shipping points in the harbor of San Francisco is transported by rail, and one-third by water. The main line and branches of the Central Pacific Railroad brought to the several grain terminals in 1881 1,205,401,420 pounds, in 1882 1,155,924,120 pounds, in 1883 1,001,478,910 pounds, and in 1884 (estimated) 1,226,562,560 pounds of grain. Other railroads, running through the Santa Clara, Salinas, Sonoma, and Russian River valleys, get a fair share of the grain traffic of those sections. A large part of the wheat produced in the bay counties is shipped to market in schooners, while that of the southern coast counties is shipped by steamers and sailing vessels.

All the grain raised in the vicinity of Stockton, San Joaquin County, is sent down the river on barges and steamers at a freight of 70 cents to $1 per ton, the rail charge from the same place being $1.50 per ton to Port Costa, or $2 per ton to San Francisco. Further up the San Joaquin Valley, however, the railroad secures nearly all the traffic, the upper river not being navigable except during freshets.

The farmers of the Sacramento Valley ship their wheat by water or by rail as best suits their convenience, those nearest the river preferring the water route. The navigation of the Sacramento River is attended with more or less risk on account of snags.

Those who ship by water are subjected to the extra expense of marine insurance, averaging about 25 cents per ton.

The difference in charges by rail and these by water from the Sacramento Valley is shown by comparing the tariff of the Sacramento Transportation Company's barge line with the railroad company's tariff. The railroad rates from points on the river to Port Costa or San Francisco are made about equal to the combined local rail rates from such points to Sacramento or Stockton and thence by water to Port Costa or San Francisco by water.

TRAFFIC OF THE SACRAMENTO RIVER.

The following is the estimated amount of traffic of the Sacramento River (not including the trade from the Feather) for the period from July 1, 1883, to June 30, 1884. In addition there is considerable trade in fruits and vegetables on the lower river, and in general merchandise on the upper river, for which it is impossible to obtain any record.

	Tons.
1. Sacramento Transportation Company	164,029
2. Central Pacific steamers	63,870
3. San Francisco Steamboat and Transportation Company	12,586
Total	240,485

Of this amount, 70,876 tons consisted of wheat and barley from points above Sacramento City.

The amount of wheat and barley moved during the period from August 1, 1882, to August 1, 1883, was 109,229 tons. The estimated crop for 1884 to be moved by steamers is 135,901 tons.

The estimated amount of receipts and shipments of the city of Stockton for the year ended June 30, 1884.

Articles.	Tons.	Articles.	Tons.
Shipments.		*Receipts.*	
Wheat, barley, and cereals	85,000	Agricultural implements	6,500
Flour	48,500	Paper stock, chemicals, &c	1,100
Ground feed and mill-stuff	12,500	Machinery, iron, and hardware	27,250
Vegetables, potatoes, onions, &c	21,500	Hardwood lumber	1,500
Fruit, grapes, &c	5,250	Building and fencing lumber	142,000
Carriages, furniture, &c	650	Coal	30,000
Paper	1,100	Lime and cement	1,250
Leather	1,000	Tan-bark	4,500
Hides, pelts, glue stock, &c	600	Hides, oil, and tanners' stock	750
Wine and brandy	500	General merchandise	42,500
Miscellaneous freights	9,000	Total	257,350
Total	185,600		

THE RAILROADS OF CALIFORNIA.

The first railroad constructed in California was built under the charter of the Sacramento Valley Railroad Company, incorporated August 14, 1852, and extended from Sacramento to Folsom, a distance of 23 miles. Work on this line was begun in 1855, and at the close of that year several short sections, aggregating 8 miles in length, had been completed. The remainder of the line, then under way, was fully completed in the following February. Soon afterwards the entire road was opened for traffic.

The following table exhibits the progress of the railroad mileage of California from 1855 to the close of the year 1884:

Railroad mileage of California from 1855 to 1882.

[From Poor's Railroad Manual.]

Year.	Miles completed.	Year.	Miles completed.	Year.	Miles completed.
1855	8	1865	214	1875	1503
1856	23	1866	308	1876	1919
1857	23	1867	382	1877	2080
1858	23	1868	468	1878	2149
1859	23	1869	702	1879	2209
1860	23	1870	925	1880	2201
1861	23	1871	1013	1881	2315
1862	23	1872	1042	1882	2643
1863	53	1873	1208	1883	2881
1864	147	1874	1328	1884	2945

The railroads of California have rendered a service of inestimable value in the development of the material resources and in the advancement of the commercial and industrial interests of the State. This fact is clearly indicated by the evidences of growth hereinbefore presented.

Appendix No. 64 embraces a list of the various railroads of California with the name of the corporation by which each line is operated.

Appendix No. 89 shows the mileage of the Central Pacific Railroad and its branches, owned, leased, or operated in the State of California, at the close of the year 1884. On the 1st of April, 1885, the leases of all the lines of the Southern Pacific Railroad Company held by the Central Pacific Railroad Company were transferred to the Southern Pacific Company, and at the same time the main lines and all the branches of the Central Pacific Railroad Company were leased to the Southern Pacific Company, which company has also leased and now operates the lines of its connecting railroads in Texas and in Louisiana, viz: The Galveston, Harrisburgh, and San Antonio Railway, and its connecting lines to New Orleans and their branches, forming a continuous line under one management from San Francisco to New Orleans and Galveston.

The Mojave branch, extending from Needles on the Colorado River to Mojave Junction on the main line of the Southern Pacific Railroad, has, since October 1, 1884, been operated by the Atlantic and Pacific Railroad Company under a lease. At the same time the latter company secured trackage rights from Mojave Junction to San Francisco.

The following statement shows the railroads and parts of railroad lines controlled and operated by the Southern Pacific Company under

lease or contract, at the close of the calendar year 1883, the operating accounts of which are included in the accounts of that Company:

Lines controlled and operated by the Southern Pacific Company.

Names of railroads operated.	Number of miles operated.
Main line and branches of the Central Pacific Railroad	1,215.14
Union Pacific of California	5.09
Central Pacific of California	793.25
Southern Pacific of California	529.00
Southern Pacific of Arizona	384.17
Southern Pacific of New Mexico	167.22
Galveston, Harrisburgh and San Antonio Railway, with its connecting lines and branches	1,514.00
Pacific Improvement Company	.86
Sacramento and Placerville	5.64
Stockton and Copperopolis	49.00
San Pablo and Tulare	83.01
Los Angeles and San Diego	27.60
Los Angeles and Independence	16.83
Amador Branch	27.20
Northern	100 74
Berkeley Branch	3.84
California Pacific	127.27
Total miles operated	5,049.27

From this it appears that the new Southern Pacific Company has leased and operates under lease or contract a total of 5,049.27 miles of railroad. The lines composing this total mileage are situated in California, Nevada, Utah, Arizona, New Mexico, Texas, and Louisiana.

THE RAILROAD PROBLEM OF CALIFORNIA.

In view of the fact that about 58 per cent. of the railroads of California are now under the management of the Southern Pacific Company, it is evident that the determination of local rates within the State is very largely in the discretion of the managers of that system. Besides, the several lines controlled and operated by that company constitute the western connections of the several all-rail transcontinental routes now in existence. This, of course, has given to it a large degree of control over transcontinental rates, as well as over the general administration of transcontinental traffic.

The competition of rival transportation lines has probably been less effective as a regulating force in California than in any other State or section of the country. It may also be stated generally that freight charges within the borders of the State of California, as well as transcontinental rates, are very much less regulated by the competition of rival commercial forces than is the case throughout the States and Territories situated on *the eastern side* of the continent where there are *many rival commercial cities* each one of which enjoys the advantages

of transportation lines, the traffic interests of which are closely identified with the commercial interests of such cities respectively, and which are therefore in a greater or less degree at rivalry with the railroads tributary to competing towns and cities.

In view of these facts, and also of the fact that railroad transportation has become a matter of deep public concernment in almost every country and State in which railroads have been constructed, it is not a strange thing that California should have had its special railroad problem. The questions which have come up for public discussion regarding the regulation of the railroads in that State have evoked a feeling perhaps not equaled in intensity in any other State of the Union.

For several years the subject constituted an exciting political issue. Finally, in the year 1879, the people of California had recourse to the extraordinary expedient of incorporating into their State constitution a provision for the establishment of a railroad commission, and certain provisions clearly of an administrative nature. It was made the duty of the commissioners to establish rates for the transportation of passengers and freight, and it was provided that no discrimination should be made in charges or in facilities for transportation as between persons or places. Section 21 of the new constitution provides, among other things, that excursion and commutation tickets may be issued at special rates, a matter commonly regarded as pertaining to the detail of railroad management.

In other countries, and in other States of this country, railroad commissions have been created by statutory enactments, and railroad commissioners have been clothed with ample administrative powers for the suppression of abuses. Experience seems to have proved, in the majority of cases, that when men of character and ability are selected for such positions, the correction of abuses is attended with less disturbance of the commercial, industrial, and transportation interests of the country than when attempted through the strict enforcement of administrative measures prescribed by law. In certain notable instances, also, in this country, as well as in Great Britain, the very fact that a railroad commission serves to expose railroad management to the light of publicity, and to converge upon it the moral force of an enlightened public sentiment, has exerted a most salutary influence in righting wrongs. Such methods, of course, derive their efficacy mainly from a clear apprehension of the power inherent in popular government which, in an emergency, never fails in this country to execute the sovereign will of the people.

The people of California however decided that the forces with which they had to deal, and the conditions which constituted their environment, justified them in discarding precedents and resorting to the unusual expedients of reform to which they had recourse.

The whole question at issue in California, and which was fought out

there, was, however, purely a State question. It does not therefore become an officer of the National Government, in his official capacity, to sit in judgment upon the acts of the people of that State nor upon the acts of the great railroad corporation toward which the measures adopted were mainly directed.

Beside the popular feeling of discontent at the manner in which the railroad transportation interests of the State were managed, the chief abuses alleged to exist being exorbitant rates, and unjustly discriminating rates, there were certain other causes which contributed to the feeling which finally culminated in the constitutional provision above mentioned. Among these causes were the short wheat crop of 1875, and the failure of the crop of the season of 1877; a widespread dissatisfaction on account of the manner in which the burdens of taxation fell upon individuals and upon corporations, and an excessive Chinese immigration. These things tended very strongly to increase the distress and to inflame the spirit of discontent, especially among the laboring classes.

It is believed that a thorough public discussion of the question as to the relations of the railroads to the public interests in California in connection with certain reforms effected in obedience to the demands of public sentiment, has led to a better understanding of the subject and to the measurable suppression of causes of complaint.

The railroad problem of California differs widely in some of its essential features, and in its entire detail from the questions which have arisen in the States situated east of the Rocky Mountains. To a considerable extent those differences have their origin in the geographical situation of that State, in its conditions of climate and of soil, and also in the influences of its topographical and orological characteristics.

The chief of this Bureau has not at his command the requsite means of investigating the various matters which it would be necessary for him to consider in order to arrive at a clear understanding of the railroad problem of California in all its detail. Besides it would not be proper for him to enter upon the discussion of that subject. Such a discussion, beyond the historical mention of the events as they have occurred, is outside the functions of his office.

The duty of investigating and passing judgment upon concrete questions regarding the justice or injustice of the rates or regulations which may be adopted by the railroad companies in the conduct of traffic within the borders of the several States, is one which under our governmental system is within the control of the States and properly devolves upon State railroad commissioners or other State officers charged with such duties; whereas the duty of defining and passing judgment upon evils which may affect commerce between California and the States and Territories situated east of the Rocky Mountains, with which States and Territories California is now intimately con-

nected by transportation lines, is one with which the National Government has to do, under the constitutional power of regulating commerce among the States, and which would naturally and properly command the attention of a national railroad commission. Congress has not, however, as yet seen fit to create such a commission.

The rates for traffic between the Pacific coast and the States and Territories situated east of the Rocky Mountains are determined by the managers of the transcontinental lines. The exercise of this discretionary power is, however, in a certain degree, limited and restrained by the competition of commercial forces, and also by the competition of rival transportation lines, as well as by the necessity of pursuing a line of policy which shall tend to foster and not to repress the growth of traffic.

The Panama route and the ocean route around Cape Horn exert, to a considerable extent, a regulating influence over transcontinental rates by rail, but this competition is confined chiefly to articles with respect to the transportation of which time is a consideration of less importance than freight charges. Besides, such competition is limited almost entirely to through traffic between San Francisco and Atlantic sea-ports, and, to a very great extent, between San Francisco and the city of New York.

The rates charged for transportation between San Francisco and points west of the Alleghany Mountains and between New York and points east of the Sierra Nevada Range are but little affected by the rates which may prevail via Panama or by the ocean route around Cape Horn, as the influence of the water lines over such traffic is greatly weakened or entirely counterbalanced by local rates between interior points and the seaboard.

THE TRANSCONTINENTAL RAILROAD TRAFFIC OF CALIFORNIA.

The last annual report of this office on internal commerce embraced a somewhat full and elaborate description of transcontinental railroads which have been completed and opened for traffic in the United States, and also of the progress of the Canadian Pacific Railway and several railroad enterprises in Mexico. The lines owned and operated by the Central and Southern Pacific Railroad Companies have up to the present time, February, 1885, constituted the western connection of each one of the several through lines connecting California with the States and Territories situated east of the Rocky Mountains. Until a recent date no other railroad corporation forming part of any transcontinental rail route, either owned or operated any rail line in the State of California. That of course gave to the Central and Southern Pacific Companies great power and influence in the determination of all matters pertaining to traffic across the continent. But on the 1st day of October, 1884, that portion of the Southern Pacific Railroad known as the Colorado Division, comprising the line between Mojave Station and the

Needles, passed into the possession and under the control of the Atlantic and Pacific Railroad Company. At the same time the latter company entered into a compact with the Central and the Southern Pacific Railroad Companies whereby it secured trackage facilities into San Francisco.

The following description of the several transcontinental railroads now in operation, as corrected up to December 31, 1884, was presented in the last annual report of this office on internal commerce:

The lines of the Central Pacific and the Union Pacific Railroads were united at a point near Ogden, Utah, on the 10th of May, 1869. Since that time a number of other railroads have been constructed and connections made whereby several additional transcontinental lines have been secured.

The Southern Pacific and the Atchison, Topeka and Santa Fé Railroads were joined at Deming, March 1, 1881, and at El Paso, July 1, 1881, forming a second transcontinental line.

The line of the Texas Pacific Railway was connected with that of the Southern Pacific Railroad at Sierra Blanca, Tex., a point 91 miles east of El Paso, on the 1st of December, 1881, and on the 1st of May, 1882, the rails of the New Orleans Pacific Railroad were connected with those of the Texas and Pacific Railway, thus forming a direct line of railroad transportation from San Francisco to New Orleans.

On the 1st of February, 1883, the line of the Galveston, Harrisburg and San Antonio Railway was completed from San Antonio, Tex., to a point on the Rio Grande near El Paso, at which point it connects with the line of the Southern Pacific Railroad. There was thus formed, practically under one interest and management, a second all-rail line between San Francisco and New Orleans.

On the 1st of June, 1883, the Colorado Division of the Southern Pacific Railroad and the Atlantic and Pacific Railroad were completed, forming a connection between Mojave, on the line of the Southern Pacific Railway in California, and a point on the Atchison, Topeka and Santa Fé Railroad near Albuquerque, in New Mexico.

On the 17th of May, 1883, the Denver and Rio Grande Western Railroad was completed to Ogden, in the Territory of Utah, the meeting point of the lines of the Central and Union Pacific Railroads. The Denver and Rio Grande Railway, in connection with the Denver and Rio Grande Western Railroad of Utah, now forms a link in a transcontinental line of railroad by means of its connection at the west with the Central Pacific Railroad, and at the east with the Burlington and Missouri Railroad, extending from Denver to the Missouri River and thence to Chicago, and also by its connection with the Atchison, Topeka and Santa Fé Railroad, extending from Pueblo, Colo., to the Missouri River. All the lines of the Denver and Rio Grande Railway and of the Denver and Rio Grande Western Railway are of the 3-foot gauge. In this respect it differs from all the other Pacific railroads, which are of the standard gauge, viz, 4 feet 8½ inches. This, of course, involves two transfers of freight in the conduct of through traffic by that route between California and the Missouri River. It is stated, however, by an officer of the Denver and Rio Grande Railway that this fact does not seriously affect the ability of that road to engage in through traffic, it having been able thus far to secure a full share of both the through freight and passenger business since it was opened for traffic. It is believed by that officer that the two transfers referred to will not seriously interfere with the competitive power of the road as a part of a through line, in view of the fact that as a rule freights are transferred from the cars of one railroad company to those of another in the conduct of through traffic over competing routes engaged in the conduct of transcontinental traffic. It is stated that the different railroad companies find it for the most part more economical thus to transfer freights than to allow their cars to pass from under their control and supervision.

The Denver and Rio Grande Railway Company have laid a third rail from Denver to Pueblo for the accommodation of cars of other railroads, and it is said to be the intention of the company to lay a third rail from Ogden to Salt Lake City.

The Utah and Northern Railway, of the 3-foot gauge, a branch of the Union Pacific, was completed about November 10, 1882, from Ogden, Utah, the western terminus of the Union Pacific Railway, to Garrison, Mont., at which point it connects with the Northern Pacific Railroad. The Utah and Northern is principally owned and is operated by the Union Pacific Railway Company.

On the 22d of August, 1883, the Eastern and Western divisions of the Northern Pacific Railroad were connected at a point a few miles west of the Rocky Mountain summit. The completion of this line placed the State of Oregon and Washington Territory for the first time in direct railway communication with the other States and Territories of the United States.

The Sonora Railway, extending from Benson, Ariz., on the line of the Southern Pacific Railroad, to Guaymas, on the Gulf of California, in Mexico, was completed October 25, 1882. This line is owned and operated by the Atchison, Topeka and Santa Fé Railroad Company, which has jointly the right of way over the Southern Pacific line between Benson and Deming.

On the 14th of November, 1884, the rails of the "Oregon Short Line," a branch of the Union Pacific Railway, were united to those of the Oregon Railway and Navigation Company's Baker City branch at Huntington, a point near Burnt River, in the State of Oregon. This railroad will form an important connection between the Union Pacific Railway and the railroads of Oregon and Washington Territory.

There are several important railroads, chiefly branch lines, in course of construction in the Territories east of the Rocky Mountains, the projectors of which lines look for traffic mainly to the development of the agricultural and mineral resources of those Territories.

The last annual report of this office on internal commerce treated somewhat at length of the struggle for transcontinental traffic by rail, the conditions of competition governing such traffic, and the geographical condition affecting it. That report also treated somewhat at length of the transcontinental railroad association.

THE STATE OF OREGON.

Oregon was admitted as a State of the Union by an act of Congress approved February 12, 1859. At that time she had a population of about 40,000. The area of the State is 95,274 square miles, or somewhat greater than that of the States of New York, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut and New Jersey combined.

During the Territorial existence of Oregon, and for about ten years after her admission into the Union as a State, it occupied a comparatively isolated position, in consequence of the lack of transportation facilities for either internal or external traffic. The State had but little commerce either with other parts of this country or with foreign countries. But, notwithstanding these disabilities, Oregon has had a substantial and a somewhat rapid growth. The population of the State increased from 52,465 in 1860 to 90,923 in 1870, and to 174,768 in 1880, and it is believed that at the present time—May, 1885—it is about 300,000.

Immigration into the State has been more rapid during the last five

years than ever before. Portland is the largest city of Oregon, and the chief commercial centre of the State. It is situated on the Willamette River, about 12 miles above its confluence with the Columbia River. Its population was 2,874 in the year 1860, 8,293 in the year 1870, and 17,577 in the year 1880. It is believed to be at the present time (May, 1885) about 35,000, and in connection with its immediate suburbs on the opposite side of the Willamette River about 43,000.

RAILROADS OF OREGON.

The first railroads constructed in Oregon were designed to form connecting links in the line of navigation of the Columbia River, interrupted by the rapids known as the Cascades and the Dalles. The railroad (5 miles in length) around the Cascades was completed about the year 1858, and the railroad around the Dalles (15 miles in length) was completed about the year 1862. At the present time the more thickly settled portions of the State are within the range of railroad facilities. The increase of the railroad mileage of the State, as shown by Poor's Railroad Manual, is exhibited as follows:

Year.	Miles in operation.
1862	5
1870	159
1880	507
1882	756
January 1, 1885	1,170

The principal railroads of Oregon are described as follows:

THE LINES OF THE OREGON RAILWAY AND NAVIGATION COMPANY.

The rail lines of the Oregon Railway and Navigation Company form parts of two transcontinental lines, as follows: The main line connects at Wallula Junction with the main line of the Northern Pacific Railroad, and the line extending in a southeasterly direction from Umatilla City, on the Columbia River, connects at Huntington, in Eastern Oregon, near Burnt River, with the "Oregon Short Line," a branch of the Union Pacific Railway. The company owns and operates 518 miles of main line—regarding the road from Umatilla to Huntington as part of the main line—and 139 miles of branches.

The Oregon Railway and Navigation Company also operates an ocean steamer line between Portland, Oreg., and San Francisco, and the following river steamboat lines: From Tacoma, Wash., to Victoria and New Westminster, British Columbia; from Portland to Astoria, Oreg.; from Portland to the city of The Dalles; from Portland to Eugene City and from Riparia, Wash., to Lewiston, Idaho.

The Oregon Railway and Navigation Company has never received any subsidy from the National Government in money, nor any grant of land except lands actually required and occupied by the company for its uses as a highway of commerce, such lands being donated under the provisions of general laws of Congress for the encouragement of railroad construction.

The origin and growth of the several rail and water lines of the Oregon Railway and Navigation Company have been mainly a result of the development of the commercial and industrial interests of the State of Oregon and of Washington Territory, of which development those lines have been a most efficient instrumentality. The traffic operations of the company had attained to a very considerable magnitude before it became necessary for its management to take action in regard to transcontinental connections, either by the Northern Pacific route or by the Oregon Short Line and Union Pacific route.

The gross earnings of the company during the year ended June 30, 1884, amounted to $5,364,906.52, and were chiefly from local traffic.

As a member of the Transcontinental Railroad Association, the Oregon Railway and Navigation Company will share its through traffic to and from points east of the Missouri River with the Northern Pacific Railroad and the Union Pacific or Oregon Short Line.

The lines of the Oregon Railway and Navigation Company traverse about three-fourths of the present wheat-growing area of Oregon and Washington Territory. The transportation of wheat constitutes about half the entire traffic of the several rail lines owned and operated by the company.

THE OREGON AND CALIFORNIA RAILROAD AND THE OREGON BRANCH OF THE CENTRAL PACIFIC RAILROAD.

The Oregon and California Railroad, of the State of Oregon, and the Oregon Branch of the Central Pacific Railroad, in the State of California, will, upon their completion, form a direct rail communication between San Francisco and Portland, Oreg. This line will not constitute a part of any transcontinental route, but it will undoubtedly, upon its completion, exert some influence upon the general question as to the conduct of "through" or transcontinental traffic.

There remain yet uncompleted of this line 29 miles of heavy work in the State of Oregon and 125 miles in the State of California. A stage-coach line is established between the ends of the completed portions for passenger and express traffic. The lines of the two companies will meet at or near the border line between the two States. Work on both lines has for some time been suspended, but it is understood that the two companies are endeavoring to make arrangements for the resumption of work at the earliest practicable moment.

The Central Pacific Railroad Branch now extends to Delta, 208 miles from Sacramento.

The Oregon and California Railroad is now operating 448 8/10 miles of road in the State of Oregon, to wit:

	Miles.
East Side Division, including the southern extension, starting at Portland and terminating at Ashland	340.8
(The road is finished for about 1½ miles beyond Ashland, but is not in operation.)	
Lebanon Branch from Albany Junction, one mile south of Albany, to Lebanon.	11.5
West Side Division from Portland to Corvallis	96.5
Total mileage in operation	448.8

THE TRANSCONTINENTAL RAILROAD FACILITIES OF OREGON AND WASHINGTON TERRITORY.

On the 22d of August, 1883, the Eastern and Western divisions of the Northern Pacific Railroad were connected at a point a few miles west of the Rocky Mountain Summit. The completion of this line placed the State of Oregon and Washington Territory, for the first time, in direct railway communication with the other States and Territories of the United States.

On the 14th of November, 1884, the rails of the "Oregon Short Line," a branch of the Union Pacific Railway, were united to those of the Oregon Railway and Navigation Company's Baker City branch at Huntington, a point near Burnt River, in the State of Oregon. This afforded the advantages of a second transcontinental rail line. These new facilities of transportation have been highly promotive of the commercial and industrial interests of Oregon and Washington Territory, and they have also tended to stimulate immigration into that section of the Pacific slope.

Under the terms of the Transcontinental Railroad Association the rates for transportation between Portland, Oreg., and points east of the Missouri River are made substantially equal to those between San Francisco and the same points east of the Missouri River. This has secured the commercial independence of Portland with respect to its trade with the States and Territories situated east of the Rocky Mountains, and it has also tended greatly to stimulate the growth of its commercial interests as well as of the commercial and industrial interests of the entire State of Oregon, as well as of Washington Territory.

In view of the great importance of the Northern Pacific Railroad to the agricultural, mining, industrial, and commercial interests of Oregon and Washington Territory, a brief description of that enterprise is here presented.

THE NORTHERN PACIFIC RAILROAD.

The Northern Pacific Railroad, embracing both owned and leased lines, extends *from Duluth and* Superior, on Lake Superior, and from

Saint Paul and Minneapolis at the east, to Wallula, Washington Territory, at the west, where it connects with the main line of the Oregon Railway and Navigation Company. The Northern Pacific Railroad Company has recently completed a line from Duluth to the harbor of Ashland on Lake Superior, in the State of Wisconsin, at which point it will connect with the Wisconsin Central Railroad and the Milwaukee, Lake Shore and Western Railway.

The Northern Pacific Railroad Company now (May, 1885) operates 2,548.61 miles of railroad, of which 2,053.56 miles are regarded as main lines and 495.05 miles as branches.

It is expected that the line from the Columbia River, at a point near Ainsworth, in the eastern part of Washington Territory, to Tacoma, on Puget Sound, will be completed about September 30, 1885, with the exception of the tunnel at the summit of the Cascade Mountains, the construction of which will require several years. Already 25 miles of road have been constructed at each end of this line. Twenty-five miles of road are also under construction at the west end, and 85 miles at the east end, leaving a gap of 114 miles, which was put under contract during the month of December, 1884. This part of the line of the Northern Pacific Railroad Company, commonly known as its "Cascade Division," is being built in conformity with the requirements of its charter, and also upon the inducements of traffic expected to be developed by the agricultural wealth of the country, and by its resources of timber, and of coal, iron, copper, and the precious metals. The completion of this line to Tacoma will also afford to the company the important advantage of direct communication with maritime commerce, and of access to the bituminous coal fields near Wilkeson. Thenceforth the cost of coal as fuel for the use of the railroad company will be greatly reduced, and an eastbound coal traffic will undoubtedly spring up. The value of the trade of Puget Sound alone is now estimated at about $900,000 a year. The harbor of Tacoma admits vessels of the greatest draught, as does also that of Seattle. It appears probable that at some point on Puget Sound a large commercial city will eventually be built, at which direct trade will be established with foreign countries.

Under the provisions of an agreement between the Oregon Railway and Navigation Company and the Northern Pacific Railroad Company, all through traffic between Portland, Oreg., and Minneapolis, Saint Paul, and Duluth, Minn., is prorated upon the basis of 15 per cent. to the Oregon Railway and Navigation Company, and 85 per cent. to the Northern Pacific Railroad Company. This is secured by a perpetual contract.

The interests of the two companies are mutual with respect to through traffic, as against the competition of the route from the east to San Francisco and thence by sea to Oregon and Washington Territory, and it is upon the basis of this joint traffic interest that the two lines maintain their relation to the Transcontinental Railroad Association.

The Northern Pacific Railroad, in common with almost all the other transcontinental rail lines, is one of those bold undertakings entered upon, not for the purpose of meeting the demands of existent commerce and industries, but conceived and carried to completion by faith in the development of the resources of the territory which it traverses and of the sections of the country which it unites. Results already realized seem fully to verify the forecast of its projectors, and the undeveloped possibilities of Oregon, of the Territories of Washington, Idaho, Montana, and Dakota, and of the State of Minnesota, now give promise of a large and constantly increasing traffic.

Already the local traffic of the Northern Pacific Railroad greatly exceeds in magnitude that of its through traffic. This is shown as follows:

Direction.	Through.	Local.	Total.
	Tons.	*Tons.*	*Tons.*
East bound	19,350	475,011	494,361
West bound	47,926	900,514	948,440
Total	67,276	1,375,525	1,442,801

The chief sources of the transcontinental traffic of the Northern Pacific Railroad at the east are Saint Paul, Minneapolis, Duluth, and Superior, Minn. At Saint Paul and Minneapolis it connects with the Chicago and Northwestern Railway, the Chicago, Milwaukee and Saint Paul Railway, and other important lines, and at Duluth and Superior with navigation on the Great Lakes. By these important connections the Northern Pacific Railroad is brought into direct communication with all the sources of transcontinental traffic east of the Mississippi, including also Canada, and foreign countries, via Montreal and via the Atlantic sea-ports of the United States.

In aid of its construction, the Northern Pacific Railroad received from the National Government a land grant, of which the company estimates it has earned 41,600,000 acres. Already 746,390.22 acres have been patented.

The following are the lines operated by the Northern Pacific Railroad Company, as stated by its president, Mr. Robert Harris, under date of November 14, 1884:

MAIN LINE AND BRANCHES OF THE NORTHERN PACIFIC RAILROAD.

MAIN LINE.

	Miles.
Duluth to Northern Pacific Junction (owned in common with Saint Paul and Duluth Railroad Company)	23.2
Northern Pacific Junction to Wallula Junction	1,650.5
Northern Pacific Junction to Superior City	23.5
Superior City to east end of accepted road	26.5
Portland to south bank of Columbia River, opposite Kalama	36.3
Kalama to Tacoma	105.1

	Miles.	
Cascade Branch.		
Tacoma to South Prairie	25.0	
From Columbia River up Yakima Valley	25.0	
Main line and Cascade branch, total		1,915
LEASED.		
Brainerd to Minneapolis (Saint Paul and Northern Pacific Railway)	127.1	
Trackage, Minneapolis to Saint Paul (Saint Paul, Minneapolis and Manitoba Railway)	11.36	
		2,053.56
BRANCH ROADS.		
Minnesota: Little Falls and Dakota Railroad	87.85	
Minnesota: Northern Pacific, Fergus and Black Hills Railroad	117.10	
Dakota: Fargo and Southwestern Railroad	87.40	
Dakota: Sanborn, Cooperstown and Turtle Mountain Railroad	36.50	
Dakota: Jamestown and Northern Railroad	64.10	
Dakota: Sykeston branch of Jamestown and Northern	12.90	
Montana: Rocky Mountain Railroad of Montana (National Park branch)	51.70	
Montana: Helena and Jefferson County Railroad	20.10	
Washington: Northern Pacific and Cascade Railroad	10.40	
Washington: Northern Pacific and Puget Sound Shore	7.00	
		495.05
Total length of road owned and leased to date		2,548.61

The above-mentioned lines and all other rail lines of Oregon may be found delineated upon map No. 5 at the end of this report.

THE PRINCIPAL INDUSTRIES OF OREGON.

The leading industries of the State of Oregon are agriculture, mining, manufacturing, and the fisheries.

It is impossible to prepare a table showing fully and completely the value of each one of the more important industries of the State.

Wheat.—The raising of wheat is the leading industry of Oregon. In view of the vast undeveloped resources of its soil, and the rapid increase of population, it is highly probable that the wheat product of the State will in the not far distant future be greatly increased.

The rapid growth of the wheat crop is shown by the following table:

Wheat crop of Oregon of 1859, *and of* 1869 *to* 1884, *inclusive.*

Years.	Bushels.	Value.	Years.	Bushels.	Value.
1859	826,776	(*)	1877	6,875,000	$7,031,250
1869	1,750,000	$1,487,500	1878	7,665,000	7,051,800
1870	2,340,746	2,156,500	1879	8,188,800	8,025,024
1871	2,292,000	2,383,680	1880	11,734,420	9,152,848
1872	2,406,000	1,780,440	1881	12,673,000	11,152,240
1873	3,127,000	2,814,300	1882	12,039,300	10,233,405
1874	4,875,000	3,315,000	1883	13,122,400	11,810,160
1875	4,500,000	3,915,000	1884	15,462,000	7,421,760
1876	4,675,000	3,272,500			

*No data.

The cereal product of the State of Oregon during the year 1884 consisted of the following grains:

Cereal.	Bushels.
Wheat	15,462,000
Corn	164,000
Rye	22,260
Oats	5,470,000
Barley	1,239,084
Buckwheat	9,128

The following extract from the annual report of the President of the Portland Board of Trade, concerning the undeveloped agricultural resources of Oregon, is of interest:

Not one-fifth part of our cultivatable lands have as yet been brought under cultivation. With the numerous ramifications of our railroad system, which are now being pushed to the outer verge of the vast region tributary to Portland, it is safe to say that from this time forward we can confidently expect a large annual increase in our grain trade. At present we have not more than two persons to the square mile in the basin of the Columbia River; but the rate at which immigration is now setting in this direction justifies our prediction of a vast development of our agricultural wealth in the near future.

THE PRODUCTION OF WHEAT IN OREGON AND IN THE ADJACENT TERRITORIES OF WASHINGTON AND IDAHO.

From the time of the first settlements in Oregon until about the year 1873 the culture of wheat was confined almost exclusively to the valley of the Willamette River, a branch of the Columbia, and to the valleys of the Umpquah and Rogue Rivers in Western Oregon. But about the year 1873 it was discovered that a vast area—about as large as the State of Pennsylvania—situated in part in Eastern Oregon, and in part in the Territories of Washington and Idaho, a region previously supposed to be suitable only for pasturage, was peculiarly adapted to wheat culture. This discovery, although less noised abroad than was the discovery of gold in California, is no less important in its commercial results.

Several years ago the soil of this region was subjected to chemical analysis, and it was found to be possessed of properties which have rendered the soil of the island of Sicily susceptible to wheat culture for more than two thousand years.*

The culture of wheat in Eastern Oregon and Eastern Washington Territory is carried on under the peculiar meteorological conditions of that section of the country, viz, a wet and a dry season. The wet season

* This fact was communicated to the chief of the Bureau by Ex-Senator John H. Mitchell, of Oregon. A specimen of the soil was handed to the late Prof. Joseph Henry, Secretary of the Smithsonian Institution, by whom the report in regard to the analysis was made.

continues from about October 15 to about the first of June, and the dry season embraces the remainder of the year.

Wheat is sown both in the autumn and in the spring. The yield from fall sowing is much the larger, and is also much more certain; oftentimes but little if any rain falls from the time of sowing to the time of harvesting, evaporation from the earth supplying the moisture necessary to the growth of the plant and the maturing of the grain. The yield of wheat per acre in this section is somewhat phenomenal. The average yield is said to be from 25 to 28 bushels per acre. It is stated, however, upon apparently good authority that in Eastern Oregon 50,000 bushels of wheat have been harvested in a single season from 1,000 contiguous acres of land.

The average weight of Oregon wheat is from 60 to 64 pounds per bushel. It has become known throughout the world for its excellent quality. The United States commissioner to the Exposition at Paris in 1878 reported that "the wheats of Oregon were among the best, and unsurpassed by any other variety on exhibition."

The wheat product of Oregon amounted to 826,776 bushels in 1859; to 2,340,746 bushels in 1870, and to 11,734,420 bushels in 1880. The crop of the season of 1884, the largest ever harvested, amounted to 15,462,000 bushels.

Oregon wheat is said to be whiter than the California wheat, and is thought by some shippers to possess greater strength. In the Liverpool market it generally brings 1 shilling per quarter, or 3 cents per bushel, more than California No. 1.

The principal grain markets of Eastern Oregon and Eastern Washington Territory are Umatilla, Pendleton, Weston, and La Grange, in Oregon, and Wallula, Walla Walla, Colfax, and Spokane Falls, in Washington Territory.

The principal of these towns, Walla Walla, has a population estimated at from 6,000 to 8,000. As each one of these towns is connected by telegraph with Portland and with San Francisco, the price of wheat in Eastern Oregon, Washington Territory, and Idaho is daily responsive to the fluctuations in transportation charges, and in prices throughout the world, which fluctuations determine the price of grain at Liverpool, New York, Chicago, and San Francisco.

Up to the present time the wheat of this region has been marketed chiefly at Portland, Oreg., from which port it is exported to Europe in sailing vessels, making the voyage around Cape Horn.

The general subject of the transportation of wheat from Oregon and Washington Territory over the line of the Northern Pacific Railroad to Duluth, Minn., and thence by water carriage to Europe was quite fully considered in the last annual report of this office on internal commerce. As yet such transportation of wheat overland has been conducted in a limited and somewhat tentative way.

The following statement as to the actual charges imposed for the

transportation of 30,000 bushels of wheat from Wallula to Duluth and thence to Europe, in comparison with the charges which prevailed at the same time for the transportation of wheat from Wallula to Portland, Oreg., by rail, and thence to Europe by sea, was furnished by Mr. T. F. Oakes, vice-president of the Northern Pacific Railroad, under date of December 5, 1884.

The rates on wheat by the two routes were as follows:

Overland route.

Wallula to Portland, per ton 2,000 pounds		$6 00
Ocean via Cape Horn to Liverpool		8 00
		14 00

Ocean route.

Wallula to Duluth	$8 00	
Duluth to Liverpool via Montreal	5 61	
		13 61
In favor of the Northern Pacific and Lake Superior route		39

If this difference in favor of the overland route can be maintained while ocean rates from the Pacific coast to Europe are very low, it is presumable that the overland route can successfully compete for the transportation of grain when ocean rates shall have been advanced.

The following statement shows the growth of the exportation of wheat, including wheat flour, from ports of Oregon during the years 1860, 1870, and 1880 to 1884 inclusive:

Exports of wheat from Oregon.

Year ended June 30—	Wheat.	
	Quantity.	Value.
	Bushels.	*Dollars.*
1860*	12,416	15,368
1870	115,747	119,139
1880	4,207,021	4,931,848
1881	3,736,079	3,307,864
1882	8,528,888	8,309,952
1883	4,547,628	4,597,051
1884	5,384,315	5,396,430

* Including Washington Territory.

The following quantities of Oregon wheat were marketed at San Francisco during the calendar years 1880 to 1884 inclusive:

Year.	Centals.	Bushels.
1880	254, 231	423, 718
1881	428, 463	714, 105
1882	252, 229	420, 382
1883	144, 265	240, 442
1884	337, 062	561, 803

THE PASTORAL INTERESTS OF OREGON.

The growth of the pastoral interests of Oregon is exhibited by the following table:

Statement showing the number of cattle and sheep in the State of Oregon in each of the following years.

[From annual reports of the Department of Agriculture.]

Date of report.	Oxen and other cattle and milch cows.	Sheep.
February, 1871	164, 400	419, 200
February, 1872	175, 800	486, 300
January, 1873	186, 700	534, 800
January, 1874	197, 200	561, 500
January, 1875	205, 009	634, 400
January, 1876	218, 500	710, 500
January, 1877	236, 100	859, 700
January, 1878	278, 800	1, 074, 600
January, 1879	300, 700	1, 160, 600
January, 1880	322, 900	1, 265, 100
December, 1880	324, 527	1, 176, 438
January, 1882	390, 678	2, 333 102
January, 1883	577, 491	2, 403, 157
January, 1884	601, 216	2, 571, 378
January, 1885	620, 565	2, 519, 950

THE SALMON FISHERIES OF OREGON.

The salmon fisheries of Oregón constitute one of its most important industries.

The following statement in regard to this industry is from the "Pacific Northwest":

FISHERIES.

The waters of Oregon and Washington Territory abound in fish, of which many varieties are of great commercial value. Particularly is this the fact with regard to salmon. Every river on the coast line teems with this fish, of which there are several species, all excellent in flavor, and many being noted for immense size and weight. These salmon are easily taken, and, being well adapted for canning and salting, a great and prosperous business in connection with them is carried on at several places.

Especially is this the case on the Columbia River, where the business of salmon packing is one of the principal industries. The good quality of the Columbia River fish has given it a far-famed reputation, and the demand for it is unlimited. In addition to the large market for this commodity in the Eastern States, it is sold extensively in Australia, England, and other European countries. This business is likely to be permanent, and it is capable of indefinite expansion, constantly adding to the enrichment of the country. The following figures show at a glance the growth of the salmon fishery of the Columbia River since it was established, in 1866:

Year.	Product.	Case price.	Total value.
	Cases.	*Dollars.*	*Dollars.*
1866	4,000	16 00	64,000
1867	18,000	13 00	234,000
1868	28,000	12 00	336,000
1869	100,000	10 00	1,000,000
1870	150,000	9 00	1,350,000
1871	200,000	9 50	1,900,000
1872	250,000	8 00	2,000,000
1873	250,000	7 00	1,750,000
1874	350,000	6 50	2,275,000
1875	375,000	5 60	2,100,000
1876	450,000	4 50	2,025,000
1877	460,000	5 20	2,392,000
1878	460,000	5 00	2,300,000
1879	480,000	4 60	2,188,000
1880	550,000	4 80	2,640,000
1881	530,000	5 00	2,650,000
1882	515,000	5 30	2,729,500
1883	630,000	5 00	3,150,000

About fifty canneries on the Columbia River, between the Cascades and the town of Astoria, near the mouth of that river, share in this enterprise. Cans of ordinary size hold 1 pound each, and there are forty-eight cans in each case. Estimating the weight of the case, including the cans, at 72 pounds, the pack of 1882 was about 19,000 tons, and toward the close of the season the catch was so enormous that many fish were thrown away for lack of canning facilities. Although competition has reduced the wholesale price of a case of salmon from $16 in 1866, to $5 in 1881, and the sum paid the fishermen for each fish has increased during that interval of time from 10 cents to 90 cents, the profit of the canning establishments continues to be satisfactory. In this business on the Columbia a capital of at least $2,000,000 is invested and all the operations must be conducted with the utmost system and economy to insure success. The fish are taken with gill-nets, seines, and traps. In 1882 the number of boats employed was 1,650, including 10 steam tenders. The cost of a boat, fully equipped with net, is about $600. The gill-nets are from 250 to 300 fathoms long and 20 feet deep. The seines are from 100 to 200 yards long. Each boat will catch about 2,000 fish during the season. Three average salmon will fill four dozen cans. The fishing is at its height from May to July.

Beside the salmon fisheries on the Columbia River, similar establishments, many of great importance, exist on the Willamette, the Umpqua, the Rogue, and Coquille Rivers, and at Tillamook and Coos Bay, in Oregon; and also on the waters of Puget Sound. The fish, differing much in quality and value, abound literally in millions. They crowd the seas, bays, estuaries, and the smaller rivers which flow into the ocean, at certain seasons of the year, and may be easily caught with gill-nets and with hook. There is ample opportunity still for the healthy growth of the salmon-fishing industry in the Northwest region.

WOOL.

The wool product of Oregon is rapidly assuming importance as a leading industry, as will be seen from the following table showing in round numbers the wool clip of Oregon each year from 1870 to 1883:

Year.	Pounds.	Year.	Pounds.
1870	2,000,000	1878	6,000,000
1871	2,250,000	1879	6,600,000
1872	3,000,000	1880	7,100,000
1873	3,500,000	1881	7,500,000
1874	4,000,000	1882	8,000,000
1875	4,500,000	1883	9,000,000
1876	5,000,000	1884	12,000,000
1877	5,400,000		

The value of the clip of 1884 was $2,400,000, at an average market price of 20 cents per pound.

The increase in the wool clip from year to year has been almost entirely in Eastern Oregon; the Western Oregon clip being about the same from year to year.

The large areas of grazing land in Eastern Oregon, and the absence of burs and underbrush from the ranges, render that portion of the State peculiarly adapted to wool-growing.

The comparative ease with which this industry can be carried on, and the quick and generally profitable returns therefrom, are attracting the attention of capitalists as well as of farmers. Wool-growing promises to become one of the leading industries in Oregon.

Oregon has also important and rapidly developing lumber and iron interests, besides those of hop raising and fruit culture. It has not been practicable to procure the exact data in regard to these and many other important and growing industries of the State in time for the present report.

The foregoing statistics clearly indicate that Oregon is a State of vast undeveloped resources. Besides the inducements which she offers to immigrants in her resources of soil, forests, rivers, and mines, she also presents the attractiveness of a climate of that elastic temper which is so favorable to the development of brain and brawn alike.

MANUFACTURES OF OREGON.

The people of Oregon have been led to appreciate the fact that the development of manufacturing industries is essential to the prosperity of a State. Such industries have sprung up, and have already proved to be efficient instrumentalities in the advancement of the material interests of the State. Thus a large number of workers have been employed, who otherwise would have lacked occupation, and a home market has been created for the superabundant products of agriculture

and of the fisheries. The following table exhibits the growth of manufactures in Oregon from 1860 to 1880, as stated in the reports of the decennial census:

	Value of products.
1860	$2,976,761
1870	6,877,387
1880	10,931,232

The value of the products of the various mechanical industries in Oregon during the census year 1880 is shown as follows:

Manufactures of Oregon, 1880.

[From the tenth United States census.]

Mechanical and manufacturing industries.	Value of materials.	Value of products.
	Dollars.	*Dollars.*
Flouring and grist-mill products	2,978,714	3,475,531
Foundry and machine-shop products	121,911	352,300
Lumber, sawed	1,331,342	2,030,463
Saddlery and harness	222,350	385,350
Sash, doors, and blinds	143,980	253,692
Slaughtering and meat-packing	205,517	264,712
Tin-ware, copper-ware, and sheet-iron ware	151,475	311,650
Woolen goods	227,486	549,030
All other industries	1,571,661	3,308,504
Total	6,954,436	10,931,232

THE CUSTOMS DISTRICTS OF OREGON AND WASHINGTON TERRITORY.

Oregon has four customs districts, as follows:

(1) The Southern district of Oregon, as established by the act of March 3, 1873, and changed by the act of April 25, 1882, comprises all the waters and shores of that part of the State of Oregon lying north and east of the north bank of the Siuslaw River. Coos Bay, in Coos County, is the port of entry, and Ellensburg, at the mouth of Rogue River, Port Orford, and Gardner, on the Umpqua River, are the ports of delivery.

(2) The district of Yaquina, created by the act of April 25, 1882, comprises all the waters and shores lying north and east of the north bank of the Siuslaw River to the north bank of the Salmon River, and west of the summit of the Cascade Range of mountains. Yaquina is the port of entry, and Newport a port of delivery.

(3) The district of Oregon, created by the act of August 14, 1848, and as changed by the acts of June 14, 1870, and April 25, 1882, comprises all the waters and shores lying north and east of the north bank of the Salmon River to the forty-sixth and one-half degree of north latitude, and west of the Coast Range of mountains, to the forty-eighth degree of north latitude, except *that portion* situated above the junction of the

Willamette and Columbia Rivers, and drained by those rivers and tributary waters. Astoria is the port of entry.

(4.) The district of Willamette, created by the act of June 14, 1870, and as changed by the act of April 25, 1882, comprises all the waters and shores lying north and east of the north bank of the Salmon River to the forty-sixth and one-half degree of north latitude and west of the Coast Range of mountains to the forty-eighth degree of north latitude above the junction of the Willamette and Columbia Rivers, and drained by those rivers and their tributary waters, and all other portions of said State drained by said Willamette River or its tributaries. Portland is the port of entry.

The district of Puget Sound, was created by the act of February 14, 1851. As changed by the act of April 25, 1882, it comprises all the waters and shores of the State of Oregon and Territory of Washington not included in the Southern district of Oregon and the districts of Yaquina, Oregon, and Willamette. It embraces substantially the Territory of Washington. Port Townsend is the port of entry.

FOREIGN COMMERCE OF OREGON.

The growth of the foreign commerce of Oregon is exhibited in the following table:

Value of imports and of exports of merchandise at ports of Oregon from 1856 to 1884, inclusive.

Year ended June 30—	Imports.	Exports.	Total.
	Dollars.	*Dollars.*	*Dollars.*
1856	2,724	6,234	8,958
1857	5,020	3,907	8,927
1858	39,577	9,935	49,512
1859	2,097	5,000	7,097
1860*	1,936	113,126	115,062
1861*	5,130	121,273	126,403
1862*	16,972	120,167	135,184
1863*	42,933	112,903	155,836
1864	60,059	106,240	166,299
1865	133,894	285,406	419,300
1866	214,324	281,389	495,713
1867	93,020	161,074	254,094
1868	137,134	236,775	373,909
1869	332,805	494,996	827,801
1870	248,763	267,646	516,409
1871	651,256	702,802	1,354,058
1872	618,875	701,303	1,317,991
1873	685,158	1,117,807	1,797,299
1874	490,480	2,659,519	3,149,999
1875	456,355	2,651,363	3,107,718
1876	357,904	4,123,775	4,481,679
1877	507,884	4,236,412	4,744,296
1878	498,449	6,231,555	6,730,004
1879	366,787	4,961,638	5,328,425

Value of imports and of exports of merchandise at ports of Oregon, &c.—Continued.

Year ended June 30—	Imports.	Exports.	Total.
	Dollars.	*Dollars.*	*Dollars.*
1880	321, 754	6, 071, 614	6, 393, 368
1881	775, 435	4, 550, 925	5, 326, 360
1882	721, 448	10, 437, 434	11, 158, 882
1883	702, 642	6, 364, 537	7, 067, 179
1884	825, 486	6, 903, 463	7, 728, 949

*Inclusive of Washington Territory.

From the above table it appears that the value of the foreign commerce of Oregon increased from $8,958 in 1856 to $7,728,949 in 1884.

It is also seen that the value of imports is quite small in comparison with the value of exports. The importation of merchandise into Oregon is, in fact, chiefly an incident of its large and prosperous business of exporting the surplus products of its fisheries and its wheat fields.

Of the total value of exports during the last fiscal year, amounting to $6,903,463, the value of exports to Europe amounted to $6,845,876, or more than 99 per cent. of the total value of exports.

The values of the principal and all other articles of domestic merchandise exported from Oregon during the year ended June 30, 1884, are exhibited as follows:

Articles.	Value.
	Dollars.
Wheat	3, 710, 093
Wheat flour	1, 686, 337
Fish	1, 488, 995
Wood and manufactures of	9, 147
All other articles	8, 891
Total	6, 903, 463

From this table it appears that of the total exports 78.2 per cent. consisted of wheat and wheat flour and 21.5 per cent. of fish.

The value of the principal and other articles of merchandise imported at ports of Oregon during the year ended June 30, 1884, was as follows:

Articles.	Value.	Articles.	Value.
	Dollars.		*Dollars.*
Iron and steel, and manufactures of	290, 003	Spirits, distilled	13, 767
Rice	128, 708	Flax, hemp, jute, and manufactures of	11, 594
Coal, bituminous	86, 491	Vegetables	11, 318
Cement	64, 048	Sugar and molasses	9, 662
Earthen, stone, and china ware	50 175	Tea	7, 097
Malt liquors	29, 146	All other articles	64, 802
Salt	28, 659	Total	825, 486
Oils	17, 019		
Chemicals, drugs, *dyes, and medicines*	*14, 997*		

The value of imports and of exports of merchandise at each one of the principal ports of Oregon during the year ended June 30, 1884, was as follows:

Customs districts.	Imports.	Exports.	Total.
	Dollars.	*Dollars.*	*Dollars.*
Oregon	168,341	2,519,965	2,688,306
Willamette	657,145	4,383,498	5,040,643
Total	825,486	6,903,463	7,728,949

The port of entry of the customs district of Oregon is at Astoria, and that of the customs district of Willamette at Portland.

There was no foreign commerce at either of the two other customs districts of the State of Oregon, viz, the districts of Yaquina and of Southern Oregon.

Oregon has been and still is entirely dependent for the means of transportation to Europe upon that fleet of sailing vessels already described, which in their annual course of combined voyages usually circumnavigate the globe. The movement of these vessels are controlled mainly by the maturing of the crops in different countries and by the exigencies of trade at the ports of the chief commercial nations.

The growth of the foreign commerce of Oregon is also clearly indicated by the following statement of tonnage entered and cleared at ports of Oregon during each year from 1856 to 1884 inclusive:

Tonnage of vessels entered and cleared in the foreign trade at ports of Oregon from 1856 to 1884 inclusive.

Year ended June 30—	Entered.			Cleared.		
	American.	Foreign.	Total.	American.	Foreign.	Total.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
1856	358	.....	358	388	.....	388
1857	210	.....	210	420	.....	420
1858	328	419	747	777	419	1,196
1859	56	.....	56	449	.....	449
1860	581	288	869	19,446	288	19,734
1861	7,122	383	7,505	14,391	383	14,774
1862	24,918	.....	24,918	25,056	.....	25,056
1863	17,051	.....	17,051	26,746	.....	26,746
1864	16,132	.....	16,132	28,712	.....	28,712
1865	13,854	.....	13,854	38,013	.....	38,013
1866	7,229	350	7,579	19,037	350	19,387
1867	1,104	3,678	4,782	2,121	3,678	5,799
1868	6,564	1,576	8,140	7,057	1,576	8,633
1869	19,214	1,215	20,429	21,213	1,215	22,428
1870	17,535	2,380	19,915	19,465	1,004	20,469
1871	18,844	4,319	23,165	23,877	8,002	31,879
1872	11,534	7,335	18,869	18,637	8,813	27,450
1873	11,404	16,582	27,986	20,297	14,271	34,568
1874	12,205	14,120	26,325	26,358	32,132	58,490
1875	*10,466*	40,963	51,429	17,755	50,420	68,175

Tonnage of vessels entered and cleared in the foreign trade at ports of Oregon, &c.—Continued.

Year ended June 30—	Entered.			Cleared.		
	American.	Foreign.	Total.	American.	Foreign.	Total.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
1876	10,806	19,186	29,992	31,247	56,467	87,714
1877	13,258	54,936	68,194	22,964	54,737	87,701
1878	13,617	33,276	46,893	22,934	72,916	95,850
1879	18,845	56,344	75,189	42,890	103,327	146,217
1880	7,605	76,256	83,861	32,099	112,654	144,753
1881	9,086	54,770	63,856	25,338	55,822	81,160
1882	22,089	127,277	149,366	53,338	134,716	188,054
1883	17,992	56,073	74,065	42,782	75,694	118,476
1884	7,041	66,670	73,711	40,465	82,562	124,027

From this statement it appears that the tonnage entered in foreign commerce at the ports of Oregon increased from 358 tons in 1856 to 73,711 tons in 1884.

The value of the exports of Oregon to the several foreign countries during the year ended June 30, 1884, is shown as follows:

Countries.	Value.
	Dollars.
Great Britian and Ireland	6,609,110
Belgium	198,385
France	38,441
Hong-Kong	25,771
British Columbia	21,405
All other countries in South America not elsewhere specified	8,763
Hawaiian Islands	1,648
Total	6,903,463

Early in the history of Oregon a considerable coastwise trade sprung up by sea, but it was not until after the year 1870 that the State was able to engage to any extent in foreign commerce. The subsequent growth of its foreign commerce has been the direct result of the development of its agricultural resources, wheat being the chief staple and article of export.

THE INTERNAL NAVIGATION OF OREGON AND WASHINGTON TERRITORY.

The internal navigation of Oregon and Washington Territory, with the exception of Puget Sound and a few small rivers emptying into the Pacific Ocean, which are navigable only for short distances and by vessels of small size, is confined to the Columbia River and its tributaries. Navigation upon these streams is interrupted at various points by rapids and falls. But careful surveys and estimates of cost show that the several *rivers, at the points* where obstructions occur, are susceptible

ble of such improvements, by the removal of rocks and the construc
of canals around rapids, as will secure a total inland navigation for
sels of various classes of 1,654 miles, as follows:

Main Columbia River	1
Pend d'Oreille River	
Willamette River	
Clear Water River	
Snake River	
Kootenay River	
Total	

Attention is invited to the interesting and instructive statemen
regard to the Columbia River and its tributaries, and the practicabi
of their improvement, furnished to this office by Judge Jasper W. J
son, of Oregon. (See Appendix No. 87.)

The work of improvement at the Cascades, the Lower Rapids of
Columbia, is well advanced towards completion, and surveys and
mates of cost have been made for the improvement of The Dalle
miles above.

It would be difficult to estimate the commercial importance of
needed improvement of the upper waters of the Columbia River an
branches, but it is certain that such improvement would tend to cr
and to promote a vast internal commerce.

THE IMPROVEMENT OF THE ENTRANCE TO THE CITY OF PORTL
BY SEA.

The internal improvements of the highest importance, in a comm
cial point of view, to Oregon, Eastern Washington Territory, and Id
are those which are needed in order to secure a deep and safe cha
over the bar at the mouth of the Columbia River, together with
dredging and permanent works which may be necessary in orde
secure a depth of at least 24 feet of water from the wharves at Portl
to the ocean. The city of Portland is the commercial *entrepôt* of an
possessed of the inestimable advantages afforded by a salubrious
mate and a fertile soil, and abounding in resources of agricultur
mining, and of forestry. This region is as large as the New Engl
States, New York, New Jersey, Pennsylvania, Maryland, Delaw
Virginia, and West Virginia combined, and is apparently capabl
sustaining as large a population as now exists in those States.
believed, therefore, that the improvement of the Columbia and Will
ette Rivers from the ocean to Portland, even though it should inv
engineering works of heroic magnitude, is not only fully justified
commercial and industrial interests now existent, but also in a m
higher degree by the object of developing the vast possibilities of
great area of which the city of Portland is the natural seaport, an
which it will probably remain for all time the chief commercial en
rium.

WASHINGTON TERRITORY.

The time which it was possible to devote to the commercial, industrial, and transportation interests of the Pacific coast having expired before Washington Territory could be made the subject of special investigation, the present mention of the material interests of that Territory must be confined mainly to certain tables relating to foreign commerce, shipping, manufactures, and wheat culture.

The value of the principal and all other articles of domestic merchandise exported from Washington Territory during the year ended June 30, 1884, is exhibited as follows:

Articles.	Value.	Articles.	Value.
	Dollars.		*Dollars.*
Wood, and manufactures of	813, 699	Fur and fur skins	21, 113
Breadstuffs	256, 554	Fish	14, 757
Animals, live	83, 059	Cotton, manufactures of	14, 355
Iron and steel, and manufactures of	75, 560	Oils, mineral	13, 115
Provisions, comprising meat and dairy products	44, 240	All other articles	121, 631
Wool, and manufactures of	24, 042	Total domestic exports	1, 482, 035

The value of the exports of Washington Territory, by countries, during the year ended June 30, 1884, is shown as follows:

Countries.	Value.	Countries.	Value.
	Dollars.		*Dollars.*
British Columbia	1, 065, 984	China	19, 474
British possessions in Australasia	262, 520	United States of Colombia	12, 688
Hawaiian Islands	247, 689	Mexico	9, 557
Chili	147, 129	France possessions, all other	6, 911
Peru	99, 199	Total exports	1, 954, 581
Belgium	83, 430		

The value of the principal and other articles of merchandise imported at ports of Washington Territory during the year ended June 80, 1884, was as follows:

Articles.	Value.	Articles.	Value.
	Dollars.		*Dollars.*
Fur and fur skins, undressed	42, 318	Iron and steel, and manufactures of	5, 141
Rice	33, 987	Coal, bituminous	2, 515
Animals, live	19, 356	All other articles	21. 119
Household and personal effects, &c	6, 920	Total imports	137, 971
Oils	6, 615		

The value of imports and of exports of merchandise at the ports of Washington Territory during the year ended June 30, 1884, was as follows:

Customs district.	Imports.	Exports.	Total.
	Dollars.	*Dollars.*	*Dollars.*
Puget Sound	137,971	1,954,581	2,092,552

FOREIGN COMMERCE OF WASHINGTON TERRITORY.

The growth of the foreign commerce of Washington Territory is exhibited in the following table:

Value of imports and of exports of merchandise at ports of Washington Territory from 1856 to 1884, inclusive.

Years ended June 30—	Imports.	Exports.	Total.	Years ended June 30—	Imports.	Exports.	Total.
	Dollars.	*Dollars.*	*Dollars.*		*Dollars.*	*Dollars.*	*Dollars.*
1856	3,955	91,299	95,254	1871	34,063	394,761	428,824
1857	3,717	25,805	29,522	1972	32,914	488,669	521,583
1858	12,717	265,701	278,418	1873	35,028	601,993	637,021
1859	5,133	444,352	449,485	1874	24,566	604,339	628,905
1860*				1875	24,954	395,330	420,284
1861*				1876	37,715	462,990	500,705
1862*				1877	51,498	483,185	[illegible]
1863*				1878	30,962	565,790	[illegible]
1864	65,943	357,059	423,002	1879	26,522	558,918	[illegible]
1865	11,561	632,542	644,103	1880	17,515	361,449	378,964
1866	49,283	426,260	475,543	1881	22,284	446,795	469,059
1867	24,250	237,052	261,302	1882	51,076	876,121	927,197
1868	40,604	333,979	374,583	1883	95,441	1,770,219	1,865,660
1869	70,883	315,876	386,759	1884	137,971	1,954,581	2,092,552
1870	34,787	427,689	462,476				

* Not separately stated, included in Oregon.

Tonnage of vessels entered and cleared in the foreign trade of Washington Territory from 1856 to 1884 inclusive.

Year ended June 30—	Entered.			Cleared.		
	American.	Foreign.	Total.	American.	Foreign.	Total.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
1856	1,879	428	2,307	5,285	2,322	7,607
1857	1,264	1,140	2,404	124	716	840
1858	11,451	2,490	13,941	21,593	8,254	29,847
1859	29,937	3,276	33,213	40,351	2,630	42,981
1860*						
1861*						
1862*						
1863*						

Tonnage of vessels entered and cleared in the foreign trade of Washington Territory, &c.—Continued.

Year ended June 30—	Entered.			Cleared.		
	American.	Foreign.	Total.	American.	Foreign.	Total.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
1864*						
1865	42,486	10,332	52,818	47,286	24,143	71,429
1866	28,570	7,180	35,750	28,783	24,186	52,969
1867	37,474	6,792	44,266	38,795	12,586	51,381
1868	39,729	8,040	47,769	40,420	20,081	60,501
1869	36,247	7,402	43,649	39,042	20,191	59,233
1870	37,832	6,622	44,454	55,242	17,134	72,376
1871	39,467	25,517	64,984	58,763	29,108	87,871
1872	79,772	10,839	90,611	93,138	21,735	114,873
1873	80,981	23,566	104,547	96,811	25,545	122,356
1874	78,699	25,324	103,933	109,509	29,419	138,928
1875	93,134	20,081	115,215	106,668	23,365	130,033
1876	138,550	17,740	156,290	141,718	25,141	166,859
1877	148,780	21,219	169,999	155,216	29,206	184,422
1878	152,828	19,195	172,023	167,178	30,962	198,140
1879	132,216	50,651	182,867	134,326	55,461	189,787
1880	119,245	25,822	145,067	128,000	32,353	160,353
1881	123,153	29,516	152,669	135,444	30,346	165,790
1882	196,293	31,730	228,023	199,659	30,162	229,821
1883	215,056	39,915	254,971	226,915	52,938	279,853
1884	312,090	16,386	328,476	333,694	24,865	358,559

* Not stated.

Manufactures of Washington Territory, 1880.

[Taken from the tenth United States Census.]

Mechanical and manufacturing industries.	Value of materials.	Value of products.
	Dollars.	*Dollars.*
Lumber, sawed	1,188,075	1,734,742
All other industries	779,394	1,515,392
All industries	1,967,469	3,250,134

The following statement shows the growth of the exports of wheat, including wheat flour, from ports of Washington Territory during the years, 1860, 1870, and 1880 to 1884, inclusive:

Year ended June 30—	Wheat.	
	Quantity.	Value.
	Bushels.	*Dollars.*
1860*		
1870	1,918	2,924
1880	24,602	32,832
1881	33,278	39,095
1882	163,458	166,205
1883	446,027	451,127
1884	226,968	235,927

* *Not separately stated*, included in Oregon.

INLAND NAVIGATION OF WASHINGTON TERRITORY.

The waters of Puget Sound afford to Washington Territory extensive facilities of inland commerce, and a larger number of good harbors than any State of the Union. The Columbia River also affords considerable advantages of inland navigation, broken, however, at several points by rapids.

The following smaller rivers, emptying into Puget Sound, are navigable for stern-wheel steamers: the Dewamish, about 12 miles; the Snohomish, about 30 miles; the Skagit, about 40 miles; the Swinomish, about 10 miles; and the Lumi or Nooksack, about 30 miles.

RAILROADS OF WASHINGTON TERRITORY.

The following are the railroads of Washington Territory, with their mileage:

	Miles.
Northern Pacific Railroad	409
Puget Sound Shore Railroad	24
Columbia and Puget Sound Railway	18
Olympia and Chehalis Valley Railroad	15.5
Oregon Railway and Navigation Company's lines	195
Total	661.5

CONCLUDING REMARKS IN REGARD TO WASHINGTON TERRITORY.

The completion of the Cascade branch of the Northern Pacific Railroad will place the eastern portions of Washington Territory and the entire maritime commerce of the numerous ports on Puget Sound in direct communication with the chief centers of trade of the United States east of the Rocky Mountains. This line will actively compete with the Canadian Pacific Railroad for the transcontinental traffic of British Columbia and of Alaska, and its more favorable location in point of latitude and of distance will undoubtedly enable it to secure a large proportion of the through traffic of the entire Pacific coast north of the northern boundary line of the United States.

The Northern Pacific route will also offer decided advantages for commerce with the countries of Asia, for the reason that the prevailing winds of the North Pacific render it necessary for sailing vessels in their eastern voyages to pursue a course approaching the entrance to Puget Sound.

PART 2.

THE COTTON CROP OF THE UNITED STATES.

PRODUCTION AND MOVEMENTS OF THE COTTON CROP.

The cotton crop of the United States during each commercial year ended August 31, from 1841 to 1884, inclusive, is presented as follows

Year ended August 31—	Bales.	Year ended August 31—	Bales.
1841	1,639,353	1863	*1,000,000
1842	1,688,675	1864	*800,000
1843	2,394,203	1865	*500,000
1844	2,108,579	1866	2,314,476
1845	2,484,662	1867	2,203,988
1846	2,170,537	1868	2,576,893
1847	1,860,479	1869	2,413,557
1848	2,424,113	1870	3,114,592
1849	2,808,596	1871	4,347,006
1850	2,171,706	1872	2,974,351
1851	2,415,257	1873	3,930,508
1852	3,090,029	1874	4,170,388
1853	3,352,882	1875	3,827,845
1854	3,035,027	1876	4,632,313
1855	2,932,339	1877	4,474,069
1856	3,644,845	1878	4,773,865
1857	3,056,519	1879	5,074,155
1858	3,238,962	1880	5,761,252
1859	3,994,481	1881	6,605,750
1860	4,823,770	1882	5,456,048
1861	3,826,086	1883	6,949,756
1862	*1,000,000	1884	5,713,200

*Estimated.

The above statistics of the cotton crop from 1841 to 1871 are from annual statements of the New York Shipping List; from 1872 to 1874 they are from the New York Commercial and Financial Chronicle, and since 1874 the figures are those of the National Cotton Exchange of America.

NOTE.—The "sea-island" cotton product of the country amounted to only 31,500 bales in 1861, and to only 25,490 bales in 1884; all the rest was the ordinary or "upland" cotton.

These figures indicate the large increase in the production of cotton in this country. The average of the crops of the last ten years has amounted to 5,326,825 bales, as against an average of 3,358,411 bales during the ten years from 1851 to 1860.

In other words, the production of cotton for the ten years ending August 31, 1884, amounted to 53,268,253 bales, against 33,584,111 from 1851 to 1860, inclusive, showing a gain during the former period of 19,684,142, or, say, 58.6 per cent. These comparisons afford a showing of results during the most favorable decades for cotton-raising since and prior to the civil war and under the changed conditions consequent thereon. The percentage thus shown being calculated in bales in accordance with the custom of the cotton trade, does not, however, convey the full measure of comparative increase gained within the past ten years. No exact data can be obtained of the average weights of American crops prior to 1860, but computations were then made by common consent at 450 pounds gross per bale. The weights per bale for the past ten years have been from 20 to 40 pounds heavier, or, say, 4½ to 9 per cent.

Calculated in commercial bales, the cotton produced in this country during the last five years, and during the five years from 1856 to 1860, was as follows:

	Bales.
Crops of 1856 to 1860	18,758,577
Crops of 1880 to 1884	30,486,006
Excess during latter period	11,727,429

An increase of 62.5 per cent.

The cotton product of the country for the periods just mentioned, reduced to the uniform gross weight of450 pounds per bale, was as follows:

	Bales.
Crops of 1856 to 1860	18,758,577
Crops of 1880 to 1884	32,716,603
Excess during latter period in bales of uniform weight	13,958,026

An increase of 74.4 per cent.

These facts are substantial indications of the prosperity of the Southern States, and indicative of recuperative powers that have seldom been shown in the history of commerce and agriculture.

The general movements of the cotton crop are as follows:

First. The movement on the Mississippi River and tributaries and on railroads towards the Gulf ports of New Orleans, Mobile, Pensacola, Galveston, and minor Texas ports, whence it is shipped to northern ports of the United States and to foreign countries.

Second. The movement via railroads to the Atlantic seaboard south of the Potomac River, embracing from Fernandina, Fla., to Norfolk and West Point, Va.

Third. The movement overland from the cotton-growing States to points north and east of the Ohio, Mississippi, and Potomac Rivers on railroads crossing those rivers and forming connections with the great east and west trunk lines.

The details of these movements strikingly illustrate some of the important changes that have taken place in the internal commerce of the United States within the past twenty-five years.

THE "OVERLAND MOVEMENT" OF COTTON.

The movement "overland from the cotton-belt" was of little importance prior to the year 1861. There is a record of 100 bales having been transported overland during the year 1835–'36. During the year 1839–'40 this movement reached 3,250 bales, and in 1852–'53 it reached 9,740 bales.

The record of the overland movement for ten years, from 1852 to 1861, is as follows:

Years.	Bales.	Years.	Bales.
1851–'52	175	1856–'57	4,754
1852–'53	9,740	1857–'58	9,624
1853–'54	12,430	1858–'59	85,321
1854–'55	7,661	1859–'60	108,676
1855–'56	14,215	1860–'61	143,424

There are, of course, no statistics of cotton movements during the period of the late war.

The following table is a record of the growth of the overland movement of cotton for the years ending August 31, from 1866 to 1884, inclusive:

Year.	Direct to manufactories.	To northern markets.	Total overland.
	Bales.	*Bales.*	*Bales.*
1865–'66	.....	211,885	211,885
1866–'67	.....	185,712	185,712
1867–'68	170,523	204,337	374,860
1868–'69	258,611	181,189	439,800
1869–'70	153,825	196,591	350,416
1870–'71	228,923	336,996	565,919
1871–'72	122,065	220,121	342,186
1872–'73	140,500	260,796	402,296
1873–'74	237,572	259,511	497,083
1874–'75	191,604	252,616	444,220
1875–'76	305,327	390,295	695,622
1876–'77	312,789	314,803	627,595
1877–'78	295,506	384,927	680,233
1878–'79	439,842	431,115	870,957
1879–'80	518,240	615,764	1,134,004
1880–'81	508,327	559,793	1,068,120
1881–'82	489,170	597,047	1,086,217
1882–'83	641,801	536,759	1,178,560
1883–'84	591,580	397,700	989,280

The rapid growth of the overland movement of cotton was due chiefly to combinations entered into between connecting railroads for its direct shipment on through bills of lading from points throughout the cotton belt to points north and east of the Ohio, Mississippi, and Potomac Rivers. It has also been particularly favored by the remarkable increase of the crops of Texas, Arkansas, Georgia, North Carolina, South Carolina, and Tennessee, aggregating in 1883, 2,407,000 bales in excess of the crops of those States in 1860.

The percentage of the crops moved overland for the past five years has not varied materially, as will be seen by the following statement:

Year.	Total crop.	Gross overland.	Per cent. of crop shipped overland.
	Bales.	*Bales.*	*Per cent.*
1880	5,761,252	1,134,004	19.6
1881	6,605,750	1,068,120	16.2
1882	5,456,048	1,086,217	19.9
1883	6,949,756	1,178,560	16.9
1884	5,713,200	989,280	17.3

During the year ended August 31, 1884, the overland movement constituted 38 per cent. of the quantity taken for Northern consumption and Northern export, which together embraced the total movement both overland and coastwise during the season.

The following table indicates the points at which the cotton constituting the total overland movement crossed the Ohio and Mississippi Rivers from the year ended August 31, 1870, to the year ended August 31, 1884, and the quantity at each point:

Year ended August 31—	Saint Louis.	Hannibal.	Cairo.	Evansville and Shawneetown.	Louisville, exclusive of through cotton by river to Cincinnati.	Cincinnati, receipts, exclusive of receipts by rail through Louisville.	All other points.	Total.
	Bales.	*Bales.*	*Bales.*	*Bales.*	*Bales.*	*Bales.*	*Bales.*	*Bales.*
1870	12,298	.....	21,567	40,371	106,506	146,424	17,250	350,416
1871	19,726	.....	76,509	32,085	210,341	215,758	11,500	565,919
1872	36,421	.....	22,646	21,894	122,100	122,128	18,000	343,189
1873	51,795	2,213	23,674	22,369	171,296	108,949	22,000	402,296
1874	92,196	6,148	23,383	34,353	216,727	103,276	21,000	497,083
1875	128,805	8,425	69,887	9,423	196,253	33,225	10,934	456,952
1876	247,095	27,676	112,059	20,002	242,587	43,934	6,712	700,065
1877	204,227	36,807	118,832	12,385	202,663	46,099	12,610	633,173
1878	248,313	22,965	99,576	19,653	216,242	70,819	11,693	689,261
1879	330,062	106,732	101,766	15,500	227,504	79,219	10,174	870,957
1880	463,044	125,217	163,559	35,003	254,890	75,989	13,602	1,134,004
1881	383,309	140,046	159,995	27,971	199,580	145,921	11,298	1,068,120
1882	378,377	103,095	162,995	14,855	231,597	183,357	11,961	1,086,217
1883	445,210	111,594	220,733	27,799	170,834	122,724	79,636	1,178,560
1884	265,810	77,364	237,471	34,733	225,897	95,469	51,736	989,280

The total shipments from Saint Louis during 1883–'84 were 304,273, but of these 35,117 were in Cairo, and included at that point, and 3,346 to Southern outports.

A noticeable feature of the movement of the past two years is the increase in shipments across the Potomac River. This is carried on principally via the Norfolk and Western Railroad and connections, under what is known as the Roanoke route, and by the Alexandria and Fredericksburg, and Virginia and Midland Railroads. Up to 1882, inclusive, there had been virtually no movements to points north and east over these routes, while in 1883 it suddenly swelled to 70,017. The aggregate was reduced from local causes, competition, &c., in 1884 to 45,147; but the shipments continued on a scale to indicate that these new routes are likely to become important elements in the overland transportation of cotton.

With the exception of a few thousand bales grown in the Indian Territory, all the cotton brought to Saint Louis by the Missouri, Kansas and Texas Railroad, the feeder to the lines leading north and east from Hannibal, is shipped direct from Denison, Tex., and is the product of that State. Almost all the cotton which reaches points on the Ohio and Upper Mississippi Rivers in the overland movement is transported by rail. A large percentage of the shipments overland consists of purchases at interior points in the Southern States by agents of northern mills or by merchants in eastern cities.

The facilities for such direct shipments and favorable freight rates by rail when calculated in connection with the avoidance of extra handling at southern outports, place the overland routes beyond competition for supplying the eastern mills at seasons of the year when quantity and styles of cotton needed are to be had at interior points situated on through rail lines. Local charges at many interior towns are lower than those of southern seaports, and hence encourage a considerable business direct with Great Britain and other foreign countries on through bills of lading. This business, though of fair magnitude by overland routes, especially from Saint Louis and Memphis, is principally sent by rail and river via New Orleans, and by rail via Galveston, Mobile, Savannah, and Norfolk; the cotton merely passing through those points, thence taking ocean carriers to points of destination, both foreign and coastwise.

The extent of this latter movement for the past year, 1883–'84, is best shown as follows:

Ports.	Gross receipts.	Transit cotton.	Per centage of transit.
	Bales.	*Bales.*	*Per cent.*
New Orleans	1,709,381	606,002	35.5
Mobile	265,458	98,517	37.1
Galveston	605,703	333,266	55.0
Savannah	655,784	315,000	48.8
Norfolk	582,872	284,759	48.0

In short, of a total of 3,819,198 bales of cotton actually received at the above five leading outports, 1,637,544 bales, or, say 42.9 per cent., were in transit, leaving for actual handling by the merchants of those ports but 2,181,654 bales.

SHIPMENTS OF COTTON TO SOUTH ATLANTIC AND GULF PORTS.

There has been an important change in the movement of cotton by the shipment of it on rail lines from points throughout the cotton-belt to South Atlantic ports, chiefly the ports of Norfolk, Va., Wilmington, N. C., Charleston, S. C., and Savannah, Ga. This, as well as the overland movement by rail, has caused a deflection of cotton shipments from the Gulf ports.

The cotton which passes through the ports of Norfolk, Va., Wilmington, N. C., Charleston, S. C., and Savannah, Ga., consists largely of direct shipments from interior points in the South to northern seaports or manufactories in the Northern States, through arrangements entered into between railroads and coastwise steamer lines. Shipments direct from interior points in the cotton-growing States to foreign countries through the ports of Norfolk, Wilmington, Charleston, Savannah, Mobile, Galveston, and New Orleans by means of combinations entered into for such direct shipments between the railroads of the Southern States and steamers sailing from those ports to foreign ports have increased in a marked ratio within the past five years.

Of the cotton movement via New Orleans, the most important of the Gulf ports, the Cotton Exchange of that city publishes the following table:

	1883–'84.	1882–'83.	1881–'82.	1880–'81.
	Bales.	*Bales*	*Bales.*	*Bales.*
Cotton crop of the United States	5,713,200	6,949,756	5,456,048	6,605,750
Gross receipts at New Orleans	1,709,381	2,013,586	1,373,175	1,883,849
Per cent. gross receipts at New Orleans to cotton crop of United States	29.92	28.97	25.16	28.52
Transit cotton passing through New Orleans	606,002	717,366	268,309	466,170
Per cent. of transit to gross receipts at New Orleans.	35.5	35.6	19.4	24.7
Number of bales handled in presses of New Orleans or, in other words, received and sold in this market.	1,103,379	1,296,220	1,104,866	1,417,679
Per cent. of cotton crops of United States received and sold in New Orleans	19.3	18.6	20.2	21.4

The same authority states that "these figures indicate a loss since 1880–'81 of nearly 120,000 bales; that is, with the same percentage of the crop as in 1880–'81, the quantity received for sale in the New Orleans market for 1883–'84, out of a crop of 5,713,200 bales, should have been within a fraction of 1,223,000 instead of 1,103,900. While local causes, such as the partial failure of crops, or vice versa, in the section tributary to this market, may affect the result exceptionally, the deductions from a series of years cannot be doubted. For a certain percentage of the supply of northern and eastern mills the trade must necessarily

be direct from the interior to mill doors by rail, avoiding the inevitable cost of handling at delivery ports. This overland movement, which, including the deliveries to northern sea-ports, amounted to 16.2 per cent. of the crop in 1880–'81, 19.9 in 1881–'82, 16.9 in 1882–'83, and 17.3 in 1883–'84, is undoubtedly more at the expense of other seaport markets than of New Orleans, the main causes affecting our trade being arbitrary local rates by which cotton is shipped from the interior *through* New Orleans to foreign and domestic ports at a fraction of what is charged from the same points on consignments to this city proper."

Predicated upon the changed conditions which have existed during the past five years, the statements of above report are correctly applied. They do not conflict with the general assertion of causes which have led to such altered conditions.

The net receipts of cotton at the South Atlantic and Gulf ports of the United States during the years ending August 31, 1855 to 1883, inclusive, are shown in the following table:

Net receipts of cotton at South Atlantic and Gulf ports.

Year ended August 31—	Galveston and Texas ports.	New Orleans.	Mobile.	Florida ports.	Savannah and Georgia ports.	Charleston and South Carolina ports.	Wilmington and North Carolina ports.	Norfolk and Virginia ports.
	Bales.	*Bales.*	*Bales.*	*Bales.*	*Bales.*	*Bales.*	*Bales.*	*Bales.*
1855	80,737	1,232,644	454,595	136,597	378,694	490,272	26,139	31,000
1856	116,078	1,661,433	659,738	144,404	389,445	495,976	26,098	20,458
1857	89,882	1,435,000	503,177	136,344	322,111	397,331	27,147	23,773
1858	145,286	1,576,409	522,364	122,351	282,973	406,251	23,999	24,705
1859	192,062	1,669,274	704,406	173,484	475,788	480,653	37,482	33,011
1860	252,424	2,139,425	843,012	192,724	525,219	510,109	41,194	56,987
1861	144,744	1,751,599	546,794	121,172	477,584	336,339	56,295	78,132
1862*								
1863*								
1864*								
1865*								
1866	174,985	711,629	429,102	149,139	263,273	112,273	64,652	37,531
1867	186,495	702,131	239,516	58,349	255,965	102,247	38,522	123,627
1868	114,666	579,231	366,193	34,639	495,959	240,225	38,587	187,487
1869	147,817	794,205	230,621	13,392	357,253	198,943	35,912	160,418
1870	246,284	1,142,097	305,956	23,194	485,514	246,503	58,884	203,981
1871	314,484	1,446,490	404,673	16,688	725,528	350,692	77,273	339,175
1872	197,956	957,538	288,012	19,359	456,539	271,241	52,528	276,098
1873	343,450	1,240,384	382,457	14,008	614,039	374,476	61,576	433,583
1874	389,045	1,221,698	288,012	14,185	625,857	438,194	57,895	505,876
1875	368,245	993,482	320,822	37,467	576,684	439,550	101,161	419,664
1876	484,539	1,424,003	374,672	39,100	498,622	416,255	105,026	498,221
1877	500,886	1,190,886	360,918	41,132	468,429	473,111	138,665	580,178
1878	461,846	1,391,519	418,632	58,288	571,117	442,886	138,049	510,581
1879	584,097	1,187,365	362,010	67,378	668,500	509,032	119,190	561,468
1880	494,885	1,504,654	358,971	44,594	714,548	497,107	96,470	756,046
1881	713,849	1,606,184	392,319	50,099	865,728	672,222	189,508	883,909
1882	459,357	1,190,711	265,044	54,879	711,967	521,842	221,313	752,026
1883	887,334	1,690,709	313,228	53,928	794,232	589,428	219,497	952,268
1884	606,919	1,529,158	244,325	66,917	639,883	433,200	176,547	733,075

* *No statistics during the war period.*

By comparing the receipts at these various ports during the six years ended August 31, 1861, with the receipts during the six years ended August 31, 1884, it appears that the shipment of cotton via Galveston increased from 940,479 bales to 3,746,441 bales, an increase of 2,805,962 bales, or 298 per cent.; that the shipments via New Orleans fell from 10,233,140 bales to 8,708,781 bales, a decrease of 1,524,359 bales, or 15 per cent.; that the shipments via Mobile fell from 3,779,491 bales to 1,935,897, a decrease of 1,843,594 bales, or 49 per cent.; that the shipments via Florida ports fell from 890,479 bales to 337,795 bales, a decrease of 552,684 bales, or 62 per cent.; that the shipments via Savannah increased from 2,473,120 bales to 4,394,858 bales, an increase of 1,921,738 bales, or 77 per cent.; that the shipments via Charleston increased from 2,626,659 bales to 3,222,831 bales, an increase of 596,172 bales, or 23 per cent.; that the shipments via Wilmington increased from 212,215 bales to 1,022,525 bales, an increase of 810,310 bales, or 381 per cent.; and that the shipments via Norfolk increased from 237,066 bales to 4,638,792 bales, an increase of 4,401,726 bales, the shipments at this port during the latter period being nearly twenty times as great as during the former period. It also appears from the foregoing table that there has been a considerable falling off in the receipts of cotton at the Gulf ports, and a very large increase in the receipts at the South Atlantic ports, embracing the more important ports between and including Norfolk, Va., and Savannah, Ga.

This is shown by comparing the aggregate receipts at the Gulf ports and at the South Atlantic ports during the six years ended August 31, 1861, with the aggregate receipts at the same ports during the six years ended August 31, 1884:

	Bales.
Receipts at Gulf ports during the six years ended August 31, 1861	15,843,586
Receipts at Gulf ports during the six years ended August 31, 1884	14,729,004
Decrease	1,114,585

This shows a decrease of 7 per cent.

	Bales.
Receipts at South Atlantic ports (from Norfolk to Savannah, inclusive), during the six years ended August 31, 1861	5,549,060
Receipts at South Atlantic ports (from Norfolk to Savannah, inclusive), during the six years ended August 31, 1883	13,278,006
Increase	7,728,946

This shows an increase of 139 per cent.

The decrease in the receipts of cotton at Gulf ports appears to have been due, in part, to the large increase in the overland movement already alluded to, as well as to the increased movement via the South Atlantic ports.

THE SHIPMENT OF COTTON VIA GULF PORTS, VIA SOUTH ATLANTIC PORTS, AND OVERLAND ON RAILROADS CROSSING THE OHIO AND MISSISSIPPI RIVERS.

The shipments of cotton via Gulf ports, via South Atlantic ports, and overland on all-rail lines are shown as follows, for the years ended August 31, from 1855 to 1883, inclusive:

Year ended August 31—	Via Gulf ports.	Via South Atlantic ports in the States of Virginia, North Carolina, South Carolina, and Georgia.	Overland, by rail lines crossing the Ohio and Upper Mississippi Rivers.
	Bales.	*Bales.*	*Bales.*
1855	1,904,573	935,105	7,661
1856	2,581,653	931,977	14,215
1857	2,164,403	770,362	4,754
1858	2,366,410	737,928	9,624
1859	2,739,226	1,026,934	85,321
1860	3,427,585	1,133,509	108,676
1861	2,564,312	948,350	143,424
1862*	.....	.....	.....
1863*	.....	.....	.....
1864*	.....	.....	.....
1865*	.....	.....	.....
1866	1,465,228	475,006	258,753
1867	1,185,593	577,338	256,340
1868	1,103,692	941,620	393,583
1869	1,186,035	733,204	439,800
1870	1,717,316	997,214	350,416
1871	2,186,915	1,513,661	560,501
1872	1,462,865	1,050,406	342,186
1873	1,930,359	1,483,674	402,296
1874	1,924,506	1,627,822	497,083
1875	1,720,016	1,537,059	454,467
1876	2,322,314	1,518,084	695,622
1877	2,093,324	1,660,383	627,599
1878	2,330,285	1,662,633	680,233
1879	2,200,850	1,858,190	870,959
1880	2,503,104	2,064,171	1,134,004
1881	2,712,352	2,661,466	1,068,120
1882	1,915,108	2,262,027	1,086,217
1883	2,945,199	2,545,425	1,178,560
1884	2,447,319	1,981,705	989,280

*No record.

Of the total movement of cotton during the year ended August 31, 1860, 73.4 per cent. was by the way of Gulf ports, 24.3 per cent. by the way of South Atlantic ports, and 2.3 per cent. by the overland movement; and of the total *movement* of cotton during the year ended

August 31, 1884, 45 per cent. was by the way of Gulf ports, 37 per cent. by the way of South Atlantic ports, and 18 per cent. by the overland movement.

It will be observed that the first and only time the shipments via southern Atlantic ports exceeded those via Gulf ports was during the year 1882. But abundant crops in the Mississippi Valley, and favorable rail and ocean rates have since restored the supremacy of the Gulf routes, resulting in an excess of shipments via the latter in 1884 of about 465,000 bales.

COMPARATIVE MAGNITUDE OF THE LARGEST CROPS PRIOR TO AND SINCE THE YEAR 1861.

	Bales.
Crop of 1860	4,823,770
Crop of 1883	6,949,756
Excess in crop of 1883	2,125,986

Distribution of cotton by ports, &c.

Receipts at—	1860.	1883.	Difference in 1883.	
			Increase.	Decrease.
	Bales.	*Bales.*	*Bales.*	*Bales.*
Texas ports	252,424	887,334	634,910	.....
New Orleans	2,139,425	1,690,709	.....	448,716
Mobile	843,012	313,228	.....	529,784
Florida ports	192,724	53,928	.....	138,796
Savannah and Georgia ports	525,219	794,232	269,013	.....
Charleston and South Carolina ports	510,109	589,428	79,319	.....
Wilmington and North Carolina ports	41,194	219,497	178,303	.....
Norfolk and Virginia ports	56,987	952,268	895,281	.....
Pacific coast	.....	94	94	.....
Overland, gross	108,676	1,178,560	1,042,019	.....
*Southern consumption	154,000	298,343	144,343	.....
Total crops	4,823,770	6,949,756	.....	.....

*Not included in port receipts.

The above figures show an aggregate increase in 1883 as compared with 1860 of 3,243,282 bales in the shipments via Texas, Georgia, South Carolina, North Carolina, and Virginia ports, overland routes and in southern consumption, against a decrease of 1,117,296 in the number of bales handled at New Orleans, Mobile, and Florida ports, the net increase of 2,125,986 bales being the difference between the two crops in comparison.

Approximately stated the following shows the shipments of cotton from each State in the years 1860 and 1883:

Produced in and shipped from—	1860.	1883.	Difference in 1883.	
			Increase.	Decrease.
	Bales.	*Bales.*	*Bales.*	*Bales.*
Alabama	857,000	780,000	.....	77,000
Arkansas	318,000	695,000	377,000	.....
Florida	56,000	62,000	6,000	.....
Georgia	608,000	837,000	229,000	.....
Louisiana	673,000	551,000	.....	122,000
Mississippi	1,047,000	1,052,000	5,000	.....
North Carolina	126,000	415,000	289,000	.....
South Carolina	306,000	564,000	258,000	.....
Tennessee	257,000	315,000	58,000	.....
Texas	374,000	1,325,000	951,000	.....
All other States	48,000	40,000	.....	8,000
Commercial crops	4,670,000	6,636,000	.....	.....
Southern consumption	154,000	298,343	.....	.....
Total crops	4,824,000	6,949,000	.....	.....

These figures show that out of an increase of 951,000 bales in Texas, Galveston and minor Texas ports gained 635,000 bales; the difference of 316,000 bales was shipped as follows: about 6,000 bales via Houston to New Orleans and 250,000 bales overland to northern and eastern points via Hannibal and Saint Louis. The decrease at New Orleans, though partly due to reduced production in Louisiana, is mainly attributable to diversion overland of the crops of Mississippi and Arkansas. The increase in the movement via Savannah and minor Georgia ports has exceeded the gain in the shipments from the crop of that State by 40,000 bales. Mobile shows a loss of 62 per cent. in shipments against a decrease of only 9 per cent. in the shipments from the State; and of the increase in the crops of North Carolina and South Carolina, Wilmington, Charleston, and minor ports in those States have handled but a part (111,000 bales) of the excess in North Carolina, and 179,000 bales of the excess of South Carolina having served to swell the shipments overland and via Norfolk.

COTTON REQUIRED FOR MANUFACTURE BY NORTHERN MILLS AND BY SOUTHERN MILLS.

The following table shows the quantity of cotton taken for consumption in the United States by northern mills and by southern mills each year during the last fifteen years and during the years 1850 and 1860:

Cotton taken by northern mills and by southern mills.

Year ended August 31—	By northern mills.	By southern mills.	Total.
	Bales.	*Bales.*	*Bales.*
1850	475,702	87,067	562,769
1860	786,521	178,107	964,628
1870	806,890	90,000	896,890
1871	1,008,956	91,240	1,100,196
1872	977,540	120,000	1,097,540
1873	1,063,465	137,662	1,201,127
1874	1,177,417	128,526	1,305,943
1875	1,070,860	129,613	1,200,473
1876	1,220,555	133,537	1,354,092
1877	1,308,816	127,189	1,429,005
1878	1,344,653	147,756	1,492,409
1879	1,375,384	186,489	1,561,873
1880	1,573,997	221,337	1,795,334
1881	1,713,626	225,311	1,938,937
1882	1,677,581	286,954	1,964,535
1883	1,759,703	313,393	2,073,096
1884	1,537,166	339,517	1,876,683

The quantity taken by northern mills increased from 786,521 bales in 1860 to 1,537,166 bales in 1884, an increase of 95 per cent., and the quantity taken by southern mills increased from 178,107 bales in 1860 to 339,517 bales in 1884, an increase of 90 per cent.

The cotton crop of the United States for the year ended August 31, 1884, was 18.4 per cent. greater than the crop of the year ended August 31, 1860. The requirements of mills in the United States increased from 964,628 bales, in 1860, to 1,876,683 bales, in 1884, an increase of 912,055 bales, or 94 per cent.

SOUTHERN CONSUMPTION OF COTTON.

The following interesting table shows the cotton consumption of each of the Southern States, as compiled from the records of the National Cotton Exchange:

States.	1883-'84.	1882-'83.	1881-'82.
	Bales.	*Bales.*	*Bales.*
Alabama	21,973	22,231	21,711
Mississippi	14,388	12,423	12,447
Arkansas	1,625	2,013	735
Kentucky	4,709	4,584	4,737
Louisiana	7,450	9,397	3,811
Missouri	6,109	6,736	7,413
Tennessee	24,669	22,210	19,044
Texas	762	962	908
Georgia	116,106	104,597	98,419

States.	1883–'84.	1882–'83.	1881–'82.
	Bales.	*Bales.*	*Bales.*
South Carolina	77,843	65,919	58,516
North Carolina	48,282	47,843	45,013
Virginia	15,233	14,118	13,840
Florida	368	360	360
Total taken by Southern spinners during the year	339,517	313,393	286,954
Of which taken from delivery ports and counted in figures for same	18,451	15,050	8,113
Leaving net taken direct from plantations and interior towns in the cotton belt	321,066	298,343	278,841

THE NORTHERN MOVEMENT OF COTTON.

The northern movement of cotton, showing separately the quantity taken by northern spinners and the quantity shipped north, and thence exported to foreign countries, is shown as follows:

Northern movement of cotton for the commercial years ended August 31.

Year ended August 31—	Taken by northern spinners.	Shipped north and exported.	Total northern movement.
	Bales.	*Bales.*	*Bales.*
1852	592,074	.....	.....
1853	660,009	.....	.....
1854	599,485	.....	.....
1855	573,843	.....	.....
1856	631,991	.....	.....
1857	683,597	.....	.....
1858	452,185	.....	.....
1859	760,218	.....	.....
1860	786,521	213,271	999,792
1861	650,357	278,612	928,969
1862–1865*	.....	.....	.....
1866	587,292	516,220	1,103,512
1867	656,307	497,947	1,154,254
1868	825,015	396,732	1,221,747
1869	918,806	350,547	1,269,353
1870	806,890	447,540	1,254,430
1871	1,008,956	710,385	1,719,341
1872	977,540	402,771	1,380,311
1873	1,063,465	614,942	1,678,407
1874	1,177,417	581,591	1,759,008
1875	1,070,860	541,365	1,612,225
1876	1,220,550	606,842	1,827,397
1877	1,301,816	556,951	1,858,767
1878	1,344,653	641,514	1,986,167
1879	1,375,384	631,514	2,006,898
1880	1,573,997	946,529	2,520,526
1881	1,713,626	943,526	2,657,152
1882	1,677,581	1,017,198	2,694,779
1883	1,759,703	1,290,582	3,050,285
1884	1,537,166	1,052,312	2,589,478

*No record.

This table shows that the northern movement increased from 1,103,512 bales, in 1866, to 2,589,478 bales, in 1884, an increase of 1,485,966 bales, or 134 per cent.

The total northern movement during the crop year of 1883–'84, as represented by takings of northern spinners and by the shipments to northern ports for exportation, was as follows:

	Bales.
Taken by northern spinners	1,537,166
Shipped north and thence exported	1,052,312
Total northern movement	2,589,478

The northern movement of cotton during the year 1860 constituted 21 per cent. of the crop, and during the year 1884 it constituted 45 per cent. of the crop.

The quantity taken by northern spinners increased from 17 per cent. of the crop, in 1860, to 27 per cent. of the crop, in 1884, and the quantity shipped north and exported thence to foreign countries increased from 5 per cent. of the crop, in 1860, to 18 per cent. of the crop, in 1884.

THE EXPORTATION OF COTTON TO FOREIGN COUNTRIES.

The following table shows the quantity of cotton exported to Great Britain, to France, and to all other foreign countries during each commercial year ended August 31, from 1870 to 1884, and during the years 1850 and 1860:

Year ended August 31—	To the United Kingdom.	To France.	To all other countries.	Total cotton exported.
	Bales.	*Bales.*	*Bales.*	*Bales.*
1850	1,106,771	289,627	193,757	1,590,155
1860	2,669,432	589,587	515,154	3,774,173
1870	1,474,695	346,450	357,772	2,178,917
1871	2,367,440	138,703	660,599	3,166,742
1872	1,454,512	184,055	318,747	1,957,314
1873	1,905,566	252,903	521,517	2,679,986
1874	1,867,036	370,865	602,180	2,840,981
1875	1,828,049	359,699	486,700	2,674,448
1876	2,019,799	455,874	755,580	3,232,253
1877	1,994,418	461,088	592,630	3,028,136
1878	2,947,185	495,135	813,022	3,355,942
1879	2,052,555	422,948	990,433	3,465,937
1880	2,554,489	397,797	912,265	3,864,551
1881	2,832,137	554,069	1,179,120	4,565,316
1882	2,294,560	379,915	876,600	3,551,075
1883	2,885,904	438,808	1,399,332	4,724,044
1884	2,484,836	468,996	962,749	3,916,581

The official statements published by the Bureau of Statistics of the cotton exports of the United States during each year ended June 30, 1850 and 1860, and from 1870 to 1884, are as follows:

Year ended June 30—	To Great Britain and Ireland.	To France.	To Germany.	To all other countries.	Total.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
1850	431, 531, 091	125, 834, 091	38, 552	77, 977, 870	635, 381, 604
1860	1, 264, 136, 782	283, 967, 334	66, 072, 526	153, 509, 696	1, 767, 686, 338
1870	649, 165, 778	153, 146, 501	86, 775, 850	69, 470, 394	958, 558, 523
1871	1, 102, 322, 343	59, 611, 304	103, 986, 223	197, 008, 154	1, 462, 928, 024
1872	703, 914, 765	88, 187, 183	42, 516, 604	98. 918, 861	933, 537, 413
1873	858, 649, 331	113, 370, 036	95, 342, 287	132, 701, 876	1, 200, 063, 530
1874	903, 571, 772	177, 365, 583	114, 613, 646	163, 051, 302	1, 358, 602, 303
1875	911, 941, 759	155, 139, 454	75, 284, 980	118, 052, 710	1, 260, 418, 903
1876	957, 329, 739	203, 975, 759	108, 545, 768	221, 554, 068	1, 491, 405, 334
1877	1, 020, 365, 436	219, 088, 761	77, 605, 283	128, 309, 650	1, 445, 369, 130
1878	1, 039, 948, 425	236, 030, 981	121, 649, 103	209, 905, 002	1, 607, 533, 511
1879	963, 774, 508	196, 988, 105	137, 484, 413	310, 125, 807	1, 628, 372, 833
1880	1, 216, 627, 184	179, 846, 277	154, 022, 564	271, 565, 089	1, 822, 061, 114
1881	1, 364, 835, 896	276, 926, 806	233, 095, 704	316, 070, 366	2, 190, 928, 772
1882	1, 180, 896, 473	166, 770, 677	162, 481, 105	229, 827, 706	1, 739, 975, 961
1883	1, 388, 205, 162	214, 414, 623	269, 291, 378	416, 163, 899	2, 288, 075, 062
1884	1, 192, 126, 794	228, 684, 355	181, 527, 646	260, 233, 735	1, 862, 572, 530

It appears that during the year ended June 30, 1884, 64 per cent. of the exports of cotton was to Great Britain and Ireland, 12.28 per cent. to France, 9.75 per cent. to Germany, and 13.97 per cent. to other countries.

The proportion exported to the United Kingdom declined from 67.9 per cent., in 1849–'50, to 64 per cent., in 1883–'84; that to France from 19.8 per cent. to 12.28 per cent.; that to Germany increased from 3.7 per cent. to 9.75 per cent., and that to all other countries from 8.7 per cent. to 13.97 per cent.

The exports of cotton to Germany increased from 66,072,526 pounds, in 1859–'60, to 181,527,646, in 1883–'84; the exports to Great Britain and Ireland amounted to 1,264,136,782 pounds in 1860, and 1,192,126,794 pounds in 1883–'84, while the exports to France were less in 1883–'84 than in 1859–'60.

EXPORTS OF COTTON FROM NORTHERN AND FROM SOUTHERN PORTS.

The following table shows the exportation of cotton to foreign countries from northern ports and from southern ports. By "northern ports" are meant all ports north of the mouth of the Potomac River, and by "southern ports" all ports south of the mouth of that river:

Exports of cotton from northern ports and from southern ports of the United States from 1856 *to* 1884.

Year ended June 30—	From northern ports.	From southern ports.	Total.	Per cent. from northern ports.
	Pounds.	*Pounds.*	*Pounds.*	
1856	118, 912, 547	1, 232, 520, 154	1, 351, 432, 701	8
1857	83, 873, 594	964, 408, 881	1, 048, 282, 475	8
1858	68, 962, 951	1, 049, 663, 061	1, 118, 626, 012	7
1859	73, 816, 492	1, 312, 652, 070	1, 386, 468, 562	5
1860	108, 071, 273	1, 659, 615, 065	1, 767, 686, 338	6
1861*	132, 129, 436	175, 386, 663	307, 516, 099	.....
1862*	5, 064, 564	.....	5, 064, 564	.....
1863*	9, 522, 624	1, 862, 362	11, 384, 986	.....
1864*	9, 801, 456	2, 192, 455	11, 993, 911	.....
1865*	6, 056, 495	550, 671	6, 607, 166	.....
1866	No report.	No report.	No report.	
1867	196, 585, 659	464, 887, 929	661, 473, 588	29
1868	169, 308, 984	615, 454, 649	784, 763, 633	21
1869	138, 059, 024	506, 268, 897	644, 327, 921	21
1870	194, 118, 376	764, 440, 147	958, 558, 523	22
1871	321, 037, 284	1, 141, 890, 740	1, 462, 928, 024	22
1872	177, 279, 756	756, 257, 657	933, 537, 413	19
1873	268, 553, 787	931, 509, 743	1, 200, 963, 530	22
1874	284, 552, 703	1, 074, 049, 600	1, 358, 602, 303	21
1875	271, 023, 367	989, 395, 536	1, 260, 418, 903	21
1876	260, 676, 353	1, 230, 728, 981	1, 491, 405, 334	17
1877	285, 827, 653	1, 159, 541, 477	1, 445, 369, 130	20
1878	306, 654, 911	1, 302, 878, 600	1, 609, 533, 511	18
1879	287, 762, 030	1, 340, 610, 803	1, 628, 372, 833	18
1880	451, 945, 092	1, 370, 116, 022	1, 822, 061, 114	25
1881	464, 092, 101	1, 726, 886, 671	2, 190, 928, 772	21
1882	513, 282, 298	1, 226, 693, 663	1, 739. 975, 961	29
1883	†629, 842, 129	1, 658, 232, 933	2, 288, 075, 062	28
1884	486, 827, 703	1, 375, 744, 827	1, 862, 572, 530	26

* No accurate reports were received or kept during the rebellion.
† Including 42,178 pounds exported from San Francisco.

It appears that during the five years from 1856 to 1860, inclusive, 6.8 per cent. of the total exports of cotton from the United States was from northern ports and 93.2 from southern ports, and that during the fourteen years from 1871 to 1884, inclusive, 22.5 per cent. of the exports of cotton was from northern ports and 77.5 from southern ports.

COTTON REQUIRED FOR HOME MANUFACTURE AND FOR EXPORTATION TO FOREIGN COUNTRIES.

The following table exhibits the proportion of each cotton crop taken by home manufacturers and of that exported to foreign countries dur-

ing the years ended August 31, 1850 and 1860, and each year from 1870 to 1884:

Year ended August 31—	Taken by home manufacturers.	Exported to foreign countries.
	Bales.	*Bales.*
1850	562,769	1,590,155
1860	964,628	3,774,178
1870	896,890	2,178,917
1871	1,100,196	3,166,742
1872	1,097,540	1,957,314
1873	1,201,127	2,679,986
1874	1,305,943	2,840,981
1875	1,200,473	2,674,448
1876	1,354,192	3,232,253
1877	1,429,005	3,028,136
1878	1,429,400	3,355,942
1879	1,561,873	3,465,937
1880	1,795,334	3,864,551
1881	1,938,937	4,565,316
1882	1,964,535	3,551,075
1883	2,073,096	4,724,044
1884	1,876,683	3,916,581

It appears from the foregoing table that the consumption of cotton by home manufacturers has increased more rapidly than the exportation of cotton to foreign countries. During the year ended August 31, 1850, there was taken by home manufacturers 26 per cent., and exported 74 per cent.; during the year 1860 there was taken by home manufacturers 20 per cent., and exported 80 per cent.; during the year 1870 there was taken by home manufacturers 29 per cent., and exported 71 per cent.; and during the year 1884 there was taken by home manufacturers 33 per cent., and exported 67 per cent.

WEIGHTS OF THE COTTON CROPS OF THE UNITED STATES.

The weights of the cotton crops of the United States for the past eight years are given in the following table:

Year—	Crop.	Average gross weight of bales.	Weight of whole crop.
	Bales.	*Pounds.*	*Pounds.*
1883-'84	5,713,200	482.66	2,757,544,422
1882-'83	6,949,756	489.95	3,405,070,410
1881-'82	5,456,058	474.38	2,588,236,636
1880-'81	6,605,750	484.40	3,199,822,682
1879-'80	5,764,252	481.11	2,771,797,156
1878-'79	5,074,155	473.85	2,404,410,373
1877-'78	4,773,865	473.47	2,260,285,666
1876-'77	4,474,069	486.45	2,095,901,297
1875-'76	4,632,313	469.67	2,175,678,045

The above figures represent the gross weight per bale, from which should be deducted, say, about 6 per cent. for bagging and ties.

Inasmuch, however, as cotton is sold by gross weight in the United States, it has been thought proper in the foregoing tables to present the statistics of gross weight.

A bale weighing, say, 500 pounds on the scales, sold at 10 cents per pound, is paid for with $50, while the spinner makes his estimate, as above stated, of 6 per cent. tare, based upon the actual amount of lint cotton he is to receive in each bale, in accordance with the custom of the country. All published prices are for gross weight, and in estimating the value of the crop gross weights and gross prices must necessarily be taken.

Frequent efforts have been made to change the method of selling cotton, but the prejudices of producers are such that no improvement in that respect has yet been made, and it is evident that many years must elapse before the European custom of actual tare will be adopted in this country.

It will be seen by the following table from the crop statement of 1883–'84 that uniformity in the weights of the bales does not prevail in the various sections of the cotton belt.

Statement showing number of bales, average weight per bale, and total quantity of cotton produced and marketed during the crop year 1883–'84.

States, &c.		Number of bales.	Average weight.	Pounds.
Louisiana		1,529,158	479.40	733,078,445
Texas		606,919	509.74	309,370,891
Alabama		244,325	495.09	120,962,864
Florida	66,917			
Georgia	639,883			
	706,800			
Less sea island	18,161			
		688,639	468.00	322,283,052
South Carolina	433,200			
Less sea island	7,329			
		425,871	468.00	199,307,628
Virginia		733,075	472.80	346,597,860
North Carolina		176,547	468.00	82,623,996
Tennessee, &c		962,110	499.00	480,092,890
Sea island crop		25,490	345.00	8,794,050
Consumed in the South not above included		321,066	481.00	154,432,746
Total year ended August 31, 1884		5,713,200	482.66	2,757,544,422
Total year ended August 31, 1883		6,949,756	489.85	3,405,070,410

Not only does the average weight of bales of each crop vary materially, but the average of each section is subject from year to year to changes due to local causes, such as taxes and freight rates per bale, the relative cost of bagging and ties, and other circumstances.

The general average has grown from about 450 pounds per bale, gross,

prior to 1861 to 489, gross, at the present time. It would appear desirable that there should be introduced, for the sake of uniformity, a statistical bale of 400 pounds, as is done in Europe; but in order to do this it is necessary to secure uniformity of action on the part of those most interested in the trade.

At a meeting in 1883 of the National Cotton Exchange Convention, at Old Point Comfort, Va., comprising representatives of most of the leading cotton markets of the United States, this matter was discussed resulting in a determination to add to future statements computations of the crop in bales of 450 pounds, net, each, and in accordance there with the secretary appended to his last statistical report the following:

STATISTICAL BALES.

At the Old Point Comfort convention in July, 1883, the following was adopted:

"The committee recommend the addition to the annual crop reports of a statement showing the crops in statistical bales of 450 pounds net, with comparison for back years, say since the commencement of the National Cotton Exchange reports."

In accordance with this there has been compiled the following, allowing 475 pounds gross to represent a net weight of 450 pounds:

Years.	Number actual bales.	Average weight.	Gross weight crop.	Number statistical bales of 450 pounds net.
		Per bale.	*Pounds.*	
1883–'84	5,713,200	482.66	2,757,544,422	5,805,357
1882–'83	6,949,756	489.95	3,405,070,410	7,168,569
1881–'82	5,456,948	474.38	2,588,236,636	5,448,919
1880–'81	6,605,750	484.40	3,199,822,652	6,736,469
1879–'80	5,761,252	481.11	2,771,797,156	5,835,362
1878–'79	5,074,155	473.85	2,404,410,373	5,061,917
1877–'78	4,773,885	473.47	2,260,285,066	4,758,496
1876–'77	4,474,069	468.4 5	2,095,901,297	4,412,424

The above does not, however, secure the desideratum of uniformity in America and in Europe.

PART 3.

THE RANGE AND RANCH CATTE BUSINESS OF THE UNITED STATES.

INTRODUCTORY REMARKS.

The portion of the United States now extensively devoted to grazing, and commonly known as the range and ranch cattle area, is delineated as accurately as it has been possible, upon Map No. 1, at the end of this report. This territory embraces about 1,365,000 square miles, and constitutes, approximately, 44 per cent. of the total area of the United States exclusive of Alaska. It is as large as all that portion of the United States situated east of the Mississippi River, together with the States of Minnesota, Iowa, Missouri, Arkansas, and Louisiana. Its area is also equal to that of Great Britain and Ireland, France, Germany, Denmark, Holland, Belgium, Austria, Hungary, Italy, Spain and Portugal, and one-fifth of Russia in Europe, combined.

By referring to Map No. 2, showing the distribution of the annual rainfall, and to Map No. 3, showing the distribution of the spring and summer rainfall of the United States, it will be seen that the range and ranch cattle area, as delineated on Map No. 1, very nearly corresponds with the great dry area of the interior. By referring to Map No. 4, which is a hypsometric sketch of the United States, it will also be seen that the portion of the country situated between the Mississippi River and the Pacific coast, and elevated more than 1,500 feet above the level of the sea, corresponds pretty nearly with the dry area and with the range and ranch cattle area.

By virtue of its characteristics of soil, rainfall, elevation, and natural food supply, this comparatively dry area is especially adapted to pastoral pursuits, and it appears to be probable that a large part of it will never be available for any other purpose. The mean annual rainfall of this area is, however, much greater than was at an early day supposed. At that time it was erroneously called the Great American Desert. It is now known to embrace a considerable amount of land available for agricultural purposes as the result of a sufficiency of rainfall or through irrigation. The early explorers appear to have been misled as to the capabilities of this area.

The expression "range and ranch cattle" in this report applies to cattle which, from the time they are dropped until they are shipped to market, seek their own food, water, and shelter, as did the buffalo, the deer, and the elk before them, and which are subject only to the restraints of herding.

The distinction between the "range" and the "ranch" cattle business herein observed, is that the former designation applies to the raising and fattening of cattle upon public lands, or upon unfenced lands generally, where the herds of different proprietors freely range and intermingle; whereas the "ranch" cattle business is carried on within inclosures, belonging to cattlemen on which only their own cattle graze.

The very fact that the range-cattle business is most profitably carried on in a large way, and that its successful prosecution involves organization and co-operative work, appears to have suggested at an early day the conduct of the business under corporate ownership and management. Accordingly this has been one of the marked features of the enterprise almost from the beginning.

Incorporated companies, chartered under the laws of this country as well as under the laws of foreign countries, are now extensively engaged in the cattle business from Southern Texas to the northern border line of the United States.

It is proposed, first, to describe the origin and development of the range and ranch cattle business in this country. The subject naturally divides itself geographically and historically into two grand divisions, viz: First, the range and ranch cattle business of the State of Texas; and, second, the range and ranch cattle business of the vast area situated north and northwest of Texas, an area which has been opened to pastoral pursuits during the last twenty years. Throughout the principal part of the area last mentioned, the cowboy has superseded the Indian, and the Texas steer has supplanted the buffalo.

THE RANGE AND RANCH CATTLE AREA OF TEXAS.

Texas has an area of 274,356 square miles, or 175,587,840 acres, exceeding in area the thirteen original States of the Union.

The raising of cattle in Texas had its origin long before the admission of that State into the Union. The original or native cattle of Texas are of Spanish and Mexican origin. Their most distinctive physical characteristics are long horns, large and vigorous lungs, small intestinal organization, and small bones. These characteristics appear to be the result of the conditions which for three hundred years have constituted their environment.

Texas cattle exhibit some of the marked self-reliant traits of the wild animal, being strong in the instinct of seeking food and water, and of self-protection against the inclemency of the weather. In the language of the herdsmen they are good "rustlers," which means that they know how and where to find food and water and have the alertness and spirit

to seek them upon the vast plains and in valleys and mountain fastnesses where they roam, and even beneath the snows which in the winter, at times, in the more northerly regions, cover their feeding grounds.

Thirty years ago almost the entire area of Texas was one vast unfenced feeding ground for cattle, horses, and sheep. Almost all the cattle of the State were, according to the popular phrase, "on the range"; *i. e.*, grazed upon the public lands. The cattle belonging to different persons were then as now known by brands upon their sides, large enough to be distinguished by a horseman at some distance. This method of designating different ownerships still prevails throughout the entire range and ranch cattle area of the United States. A general supervision of cattle within certain extensive districts is had, by horsemen commonly known as "cowboys." Twice a year the cattle of the different owners and associated owners are "rounded up"; *i. e.*, gathered together in close herds, when the calves are branded, and cattle for slaughter selected out, the rest being allowed to wander off again upon the range. During the last twenty years a great change has taken place in the cattle business of Texas. About half of the area of the State, including the eastern portion, not embraced in the range and ranch cattle area, as shown on Map 1, has been taken up, and is now being cultivated as farms. In this part of the State, cattle are raised as domestic animals, being generally provided with food and shelter in the winter. The range and ranch portion is also to a considerable extent settled up by farmers, especially the eastern and southern portions of the State.

Upon her admission into the Union Texas retained the ownership of her public lands. These lands have been surveyed and divided into townships, sections, and quarter sections in a manner quite similar to that in which the public lands of the United States have been laid out. Texas has, however, pursued a less conservative policy in regard to the disposition of her public lands than has the United States, and the result is, that the ownership of vast areas has been freely acquired for ranch purposes by individuals and corporations. In a few instances single individuals have acquired the ownership of upwards of 250,000 acres. The result of this is that with the exception of the extreme western and extreme northern portions of the State, where herds range on the public domain, the cattle business of Texas has become largely a ranch business. In other words, cattle are, to a considerable extent, confined to the lands of the different owners or associated owners.

The State of Texas is in a marked degree a cattle-breeding State. Its climate is well suited to that industry, especially in view of the fact that the calves of range cows are, under the prevailing custom as to breeding, dropped at all seasons of the year. Not only do the cows of Texas have more calves during their lifetime than cows upon the ranges of the Northwestern Territories of the United States, but of the total number of cows a larger proportion have calves each year. Also, of the

calves dropped, a larger proportion survive in Texas than upon the more northerly ranges and ranches. Differences of opinion exist, however, as hereinbefore mentioned, as to the relative advantages of Texas as a breeding State for cattle. Attention is invited to the various statements upon this point which are expressed by experts. (See Appendices, Nos. 1, 2, 3, 4, and 5.) It is asserted that the State of Texas has to-day as many breeding cows as all the other States and Territories west of the Mississippi River together.

Twenty-five years ago Texas cattle were slaughtered in immense numbers for their hides and tallow. Then the average value of three-year-old steers on the ranch or range was only from $3.50 to $4.50 a head. But a great change has taken place in the cattle interests of that State within a comparatively brief period. Railroads have been constructed, whereby the markets of Kansas City, Saint Louis, and Chicago have been opened to the Texas cattle trade. Those cities have become not only great cattle markets, but also great slaughtering and packing centers, from which live cattle, fresh beef, salted meats, and canned beef are shipped to various parts of the United States, and are also exported to foreign countries. The construction of the Missouri, Kansas and Texas Railroad, the Saint Louis, Iron Mountain and Southern Railroad, and the railroads extending west into the State of Kansas—more especially the Kansas branch of the Union Pacific Railroad and the Atchison, Topeka and Santa Fé Railroad—have been greatly promotive of the cattle interests of Texas.

During the last twenty years another movement from Texas has sprung up and has attained great commercial importance, viz, the driving of young cattle north, to stock the newly opened ranges of the vast Northwestern Territories, including also the Indian Territory, New Mexico, and Colorado. It is estimated that the total number thus driven north, composed mainly of yearling and two-year-old steers, has, since the beginning of the movement, amounted to about 3,000,000.

The opening of these new and enormous commercial possibilities to the cattle-owners of Texas has developed a vast amount of wealth, and has, of course, greatly stimulated the cattle industry of that State. Cattle which about the year 1868 were worth only $4.50 a head advanced in value to $15 and $18 per head. The lands of Texas also greatly appreciated in value, and the general prosperity of the State attracted to it hundreds of thousands of immigrants from other States and from foreign countries. The opportunities for gain and the wild fascination of the herdsman's life have also drawn to Texas many young men of education and of fortune in the Northern States, and even scions of noble families in Europe. This has also been the case throughout the entire range and ranch cattle area of the United States.

Not only is Texas a great breeding ground for cattle, but vast herds are also matured and shipped direct to market from that State. The northern and northwestern portions of the State are well adapted to

the maturing of cattle. It is estimated that during the year 1884 about 300,000 cattle were driven from Texas to northern ranges, to be there matured for marketing, and that about 625,000 beef cattle were shipped from Texas direct to the markets of Kansas City, Saint Louis, Chicago, and New Orleans.

THE WESTERN AND NORTHWESTERN RANGE AND RANCH CATTLE AREA OF THE UNITED STATES.

The western and northwestern range and ranch cattle area of the United States embraces the principal part of the Indian Territory, the western portions of Kansas, Nebraska, and Dakota, the Territories of Montana, Idaho, Wyoming, Utah, Arizona, and New Mexico, the States of Colorado and Nevada, and portions of California, Oregon, and Washington Territory.

This vast area, embracing 1,159,907 square miles, or 742,340,480 acres, has within the last fifteen years been largely devoted to the cattle business. The portion of this region in which the raising of cattle is chiefly carried on is, however, distinctively known as "The Plains." These extend from Texas to Montana, a distance of about 1,000 miles, with an average width of about 200 miles, and embracing an area of nearly 130,000,000 acres.

The discovery of the capabilities of this area for grazing purposes is said to have been accidental. The history of this important discovery is thus stated by Mr. Theodore J. McMinn, of Saint Louis:

"Early in December, 1864, a Government trader, with a wagon train of supplies drawn by oxen, was on his way west to Camp Douglas, in the Territory of Utah; but on being overtaken on the Laramie plains by an unusually severe snow-storm, he was compelled at once to go into winter quarters. He turned his cattle adrift, expecting, as a matter of course, they would soon perish from exposure and starvation. But they remained about the camp, and, as the snow was blown off the highlands, the dried grass afforded them an abundance of forage. When the spring opened they were found to be in even better condition than when turned out to die four months previously."

This discovery led to the purchase of stock cattle in Texas to be matured and fattened on the northern ranges, and the trade has steadily grown to its present enormous proportions, accelerated greatly during the past fifteen years by the building of the various railroads in the north and west.

Soon after this discovery of the possibilities of the great dry area of the north for pasturage, the range and ranch cattle trade of Texas debouched upon a territory three times as large as its original habitat. The growth of the business has been one of the marvels of this marvelous age and country. The well-known fact that for ages the buffalo had thriven during the winter in Montana, Dakota, Idaho, and Wyoming on natural grasses also inspired confidence that cattle-grazing on the more northerly ranges would be successful.

It is said that about fifty different kinds of nutritious grasses have been found on the northern ranges. The "bunch grass" (*Boutelona oligostachya*), is, however, the most nutritious and sustaining and the most abundant of all. The gramma and buffalo grasses also abound. All of these grasses derive moisture mainly from the melting snows of winter and from the rainfall of the spring months. During the summer months they are cured by the dryness of the air, thus retaining their nutritious qualities through the succeeding autumn, winter, and spring months. When these supplies are temporarily cut off by snow-falls the cattle resort to the white sage-brush and the black sage-brush, which, though not very nutritious, supply the cravings of hunger until the melting of the snows. It has been found in Wyoming and elsewhere that the alfalfa or Lucerne, a plant originally imported from Chili, can be cultivated to great advantage whenever irrigation is possible. It is a most excellent, abundant, and highly nutritious article of food for cattle as well as for hogs. It yields usually from three to four crops a year.

Already the range and ranch business of the Western and Northwestern States and Territories has assumed gigantic proportions. The total number of cattle in this area, east of the Rocky Mountains and north of New Mexico and Texas, is estimated at 7,500,000, and their value at $187,500,000.

The secretary of the Wyoming Stock-Growers' Association has recently reported that since its organization in 1873 it has increased from ten members, representing an ownership of 20,000 cattle, valued at $350,000, to a membership of 435 in 1885, representing an ownership of 2,000,000 head of cattle, valued at $100,000,000.

The range cattle business of the Western and Northwestern States and Territories is carried on chiefly upon the public lands. With the exception of the small percentage of lands the title to which has been secured under the provisions of the homestead and pre-emption laws of the United States, the desert-land acts, or the timber-culture acts, the cattle upon the northern ranges feed upon the public lands of the United States, their owners being simply tenants by sufferance upon such lands.

The great range and ranch cattle business is environed by conditions involving the public interests, which must be described in order the more clearly to meet the requirements of the resolution of the House of Representatives.

Before considering the important questions which arise as to the relations of the business to the general interests of the country throughout the public domain, and the important relation sustained by it to our commercial and transportation interests, it appears advisable to consider the meteorological characteristics of the range and ranch cattle area.

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THE CONDITIONS WHICH APPEAR TO DETERMINE THE LIMITED AMOUNT OF PRECIPITATION OF MOISTURE THROUGHOUT THE SO-CALLED DRY AREA OF THE INTERIOR OF THE UNITED STATES, AND THE PRACTICABILITY OF INCREASING SUCH PRECIPITATION.

The consideration of the conditions which determine the limited rainfall throughout the so-called dry area of the United States has an important practical bearing upon the range and ranch cattle business, in view of the efforts which are being made by the Government to increase the amount of precipitation within that area through the culture of forest trees, and also in view of the possible increase of precipitation as the result of artificial irrigation.

The winds which blow eastwardly over the Pacific Slope become heavily laden with moisture from the Pacific Ocean, and mainly perhaps from the great *kuro siwo*, or Japanese current, which sweeps along the eastern shores of Japan and washes the southern shores of the Aleutian Archipelago, the southern and western coasts of Alaska, and the western coast of British America and of the United States.

The several mountain ranges of the western portion of the continent, viz, the Coast Range, the Middle or Sierra Nevada Range, and the more easterly range known as the Rocky Mountain Range, by reason of the low temperature which prevails at and near their summits, condense the moisture of these winds.

This condensation of moisture by mountain ranges causes a large local precipitation. Consequently the winds as they proceed eastwardly beyond the Rocky Mountain Range are depleted of their original supply of moisture. This and the fact that the great range and ranch cattle area is so far removed from the Gulf of Mexico and the Atlantic Ocean, the two other principal primary sources of precipitation, in connection with known meteorological laws regarding the movements of aerial currents, seem fully to account for the small amount of precipitation throughout that area.

The meteorological conditions which determine the amount of rainfall throughout the range and ranch cattle area may, perhaps, be more clearly set forth by considering the probable primary and secondary sources of precipitation of the different sections of the country.

(*a*) THE PROBABLE SOURCES OF PRECIPITATION OF THE VARIOUS PARTS OF THE UNITED STATES.

In this connection it is a matter of interest to consider the probable sources of precipitation of the various parts of the United States. The force of the following remarks upon this subject may, perhaps, be the better appreciated by referring to the maps at the end of this report, viz, map No. 2, showing the distribution of annual rainfall; map No. 3, showing the distribution of spring and summer rainfall, and map No. 4, a *hypsometric sketch of the United States*.

The Gulf of Mexico is evidently the chief primary source of moisture of the Gulf States and of the interior, western, and northwestern States, about as far west as the 100th meridian, while the Atlantic seaboard States, and, to a considerable extent, the interior States of the Mississippi Valley and the Lake basin, receive their supply of moisture chiefly from the Atlantic Ocean.

The entire territory west of the Rocky Mountains, embracing the Pacific slope and the great interior basin of Nevada and Utah, undoubtedly receives its supply of moisture almost entirely from the Pacific Ocean.

Moisture borne by the winds from the Pacific Coast also supplies the precipitation throughout that vast mountain region formed by the Rocky Mountain ranges and their spurs—a region fitly termed by Silas Bent the "water dome" of North America. From this immense reservoir of precipitation flow the McKenzie, the Saskatchawan, and the Assiniboin toward the north, the Missouri, the Yellowstone, the Arkansas, the Red, the Rio Grande, and the Colorado toward the east and south, and the Columbia and the Colorado toward the west.

It remains to consider the sources of the rainfall of that immense region which embraces the larger part of the great range and ranch cattle area, and which is situated mainly west of the 99th meridian, north of the 31st parallel, and east of the Rocky Mountains. The elevation of this area above the level of the sea ranges from 2,000 to 10,000 feet, and its average annual rainfall is not over 15 inches. The smallness of this precipitation is clearly illustrated by the fact that the average annual rainfall at Chicago is 37.57 inches; at Leavenworth, Kans., 38.97 inches, at Saint Louis, 37.88 inches; at Nashville, 53.63 inches; at Cincinnati, 44.09 inches; at New Orleans, 64.69 inches; at Buffalo, 37.05 inches; at Washington, 43.30 inches; at New York, 42.68 inches, and at Boston, Mass., 48.21 inches.

A large amount of data in regard to the average rainfall at different points in the United States will be found in a statement furnished to this office by General William B. Hazen, Chief Signal Officer of the United Army. (See Appendix No. 11.)

By referring to Appendix No. 10 the same being a table furnished to this office by Capt. Samuel M. Mills, Acting Chief Signal Officer, it will be seen that west of the Rocky Mountains the principal precipitation occurs during the period of six months from the autumnal to the vernal equinox, and that on the east side of the Rocky Mountains the principal precipitation occurs during the six months from the vernal to the autumnal equinox. The rainfall, however, throughout the interior elevated region east of the Rocky Mountains, takes place chiefly during the months of April, May, June, July, and August.

In attempting here to state the probable sources of the rainfall of the great elevated area of the interior, attention is invited to the following opinions of three gentlemen eminent as meteorologists.

1. In a letter addressed to the chief of this Bureau, under date of February 23, 1885, Prof. Elias Loomis, of Yale College, says:

There is no doubt that the westerly winds which blow over the Rocky Mountains are very dry winds when they reach the eastern slope of those mountains, and they appear to have lost a very considerable part of their moisture by the precipitation which took place on the western slope of the Sierra Nevadas. I have examined this subject in a paper published in the American Journal of Science for July, 1881, and I herewith send you a copy of this paper. As the result of this dryness, the mean annual rainfall between the Sierra Nevadas and the meridian of 100° is, with slight exceptions, less than 15 inches. This is shown by the latest rain-charts published by the Smithsonian Institution.

Throughout all the southern part of the United States east of the Rocky Mountains, with the exception of the Atlantic coast, a considerable part of the rainfall is evidently due to vapor, which comes from the Gulf of Mexico. This influence is very decided up to the parallel of 36°, and is probably felt in a diminished degree still further north.

Near the Atlantic Coast the amount of rainfall is evidently increased by vapor which comes from the Atlantic Ocean. For the remaining portion of the United States east of the Rocky Mountains the vapor which furnishes the rainfall may come, to some extent, from these two sources, but it is chiefly derived from the chain of the Great Lakes, from the rivers, small lakes and collections of water, and from the moist earth.

2. In a letter addressed to the chief of this Bureau, under date of April 9, 1885, Mr. Silas Bent, of Saint Louis, says:

The ocean temperature of the North Pacific remains pretty much the same throughout the year and is, as I have before said, about 70° or 75° F. The temperature of the land, however, along the coasts of Oregon, Washington Territory, and the lower regions of Idaho, is much higher than that of the ocean in the summer time, and much lower in the winter season.

The vapor laden west winds, which come to those coasts from across the Pacific, partake of the temperature of the ocean, and being cooler than the land in summer, are expanded by the contact rather than contracted, and of course yield no precipitation, but in the winter, being warmer than the land, thay are contracted by the contact, and give forth the mists and rain which envelop that whole region throughout that season, and which mists and rain are congealed into snow, only when those winds reach the mountains, where the temperature is below the freezing point.

3. In a letter addressed to the chief of this Bureau, under date of March 6, 1885, Capt. Samuel M. Mills, Acting Chief Signal Officer, United States Army, says:

Your questions relate to general theories which are not easily discussed in a few words.

It seems probable that evaporation from the Kuro Siwo is no more important than that from the remainder of the Pacific Ocean.

The southwest wind that north of California passes over the Rocky Mountains and deposits rain on our Pacific Coast, undoubtedly draws most of its moisture from the Pacific Ocean; it loses more of its moisture on the immediate coast than in the neighborhood of the crest of the Rocky Mountains, but is by no means depleted; on the average its dew-point falls about fifteen degrees Fahrenheit before reaching the crest. This corresponds to a loss of about 40 per cent. of its moisture. Having passed the crest it does not furnish any more rain until its 60 per cent. residuum has been increased either by local evaporation or by mixing with moist air from some distant source, such as the Atlantic, Gulf of Mexico, Great Lakes, &c.

The facts hereinbefore presented, showing that the principal precipitation of moisture throughout the great elevated dry area of the interior

east of the Rocky Mountains occurs during the summer months, and that the principal precipitation west of the Rocky Mountains occurs during the winter months, and the views expressed by Prof. Elias Loomis, and by Mr. Silas Bent, and by Capt. Samuel M. Mills, of the United States Signal Service, seem to lead to the following hypothesis, viz: that, as stated by Mr. Bent, the winds blowing eastwardly from the Pacific Ocean during the summer months are cooler than the land, and that they are expanded rather than contracted by passing over the land. After passing the Rocky Mountain summit they retain a considerable proportion of their moisture, but not enough generally to produce precipitation, the dew-point being as stated by Capt. Mills, considerably below the temperature of the air. But by mixing with air laden with moisture from the Gulf of Mexico, the Atlantic Ocean, and with vapors which arise by evaporation from the Great Lakes, from rivers and small collections of water, and from the moist earth of the area east of the Mississippi River, as stated by Professor Loomis, such evaporation being abundant during the summer months, the dew-point is reached and precipitation takes place.

The fact that the area here referred to is especially subject to violent atmospheric disturbances, clearly due to the contact of strata of air differing in temperature, amount of moisture and electrical condition, appears to prove the intermingling of air from the Gulf of Mexico, and from the area east of the Mississippi and Missouri Rivers with the winds blowing eastwardly from the Pacific Ocean. This subject is clearly elucidated by Mr. Silas Bent in his interesting article entitled "The Birth of the Tornado," and also in Appendix No. 58.

The great range and ranch cattle area evidently receives its limited supply of moisture from various sources and under exceedingly variable and complex conditions. The subject is one of great public and scientific interest, and it is worthy of a very full and careful investigation by the Government.

THE PRACTICABILITY OF INCREASING THE AMOUNT OF RAINFALL THROUGHOUT THE GREAT INTERIOR DRY AREA.

The question of increasing the amount of rainfall throughout the extensive dry area of the interior of the country is one of the most important economic problems of the age.

The theory is held by some that the culture of trees will tend to increase the precipitation of moisture, and, accordingly, under the provisions of the so-called timber-culture laws, any individual may procure 160 acres of land upon complying with certain conditions as to the culture of trees upon a part of such lands. This theory has its earnest advocates, but it is sharply controverted by others. Perhaps the ablest and most conspicuous of its advocates is Dr. Franklin B. Hough, of Lowville, N. Y., an agent of the Department of Agriculture on Forestry

and an eminent writer upon that subject. Dr. Hough has in a letter addressed to the chief of this Bureau briefly stated the reasons upon which his views are based. (See Appendix No. 14.)

There are those who believe that the construction of railroads and telegraph lines throughout the dry area has tended to increase the amount of rainfall in that region.

It is also held by others that the system of irrigation, whereby the water of the streams which come down from the Rocky Mountains and their various spurs is turned upon the dry land, instead of allowing it to run off into the great rivers which flow easterly and empty into the Mississippi River, will tend to increase the rainfall in the dry area, from the copious evaporation which takes place from such irrigated lands. This appears to be a plausible theory, for it is based upon the known course of natural forces, but the extent to which the expedient is available is yet to be ascertained. It is, however, certain that by this means a very large area can be reclaimed to profitable agriculture. As a general rule it is found that the crops of irrigated lands are more abundant and more reliable than those of lands watered by natural rainfall.

Another expedient for obtaining water throughout this vast area is that of sinking artesian wells. By this means a considerable amount of water could be secured for the use of cattle. The effect of this would, however, be to open up extensive areas to grazing now comparatively unavailable, for the reason that they are too remote from water.

It is evident that any practical expedient for increasing the amount of precipitation throughout the dry area will also be the means of supplying, through re-evaporation and recondensation the return to the earth of moisture originally drawn from the great primary source of continental precipitation—the ocean.

It appears to be a well-established fact that in the States of Kansas and Nebraska the limits of the area sufficiently watered by natural rainfall for agricultural purposes has during the last twenty years moved westward from 150 to 200 miles. This seems to present the promise of an extensive reclamation to the arts of agriculture of lands now available only as pasturage. It is believed that this westward extension of the area of agricultural lands is due mainly to the increased amount of evaporation from lands brought under culture in the Western and Northwestern States. The foregoing facts seem to indicate the wisdom of a tentative and expectant policy regarding the disposition of the lands of the dry area now embraced in the public domain, especially in Kansas and Nebraska, and the Territories of Dakota, Montana, and Wyoming. Such lands should not be regarded as necessarily and for all time, merely pastoral lands.

The matters just treated of seem also to suggest the national importance of a careful and extended study of the meteorology and climatology of the great dry area, and a close observation of the effect of

all efforts which are being made to secure an increased precipitation of moisture, and thus to reclaim to agriculture a large part, at least, of that vast area.

CHARACTERISTICS OF THE RANGE AND RANCH CATTLE AREA WITH RESPECT TO TEMPERATURE.

The characteristics of the range and ranch cattle area, with respect to temperature during the different seasons of the year, are very clearly exhibited in the census temperature charts, and also in the annual reports of the Chief Signal Officer of the War Department. On Map No. 1, at the end of this report, are delineated the January isothermal lines. These indicate approximately the relative severity of the winter season in various parts of the range and ranch cattle area. It will be observed that these isotherms pay little heed to parallels of latitude. For example, the January isotherm of 30° sweeps in an apparently fantastic course through 14° of latitude, equal to 967 statute miles, between Washington Territory and New Mexico. Such wide departures of the isothermal lines from the parallels of latitude are due mainly to the hypsometric characteristics of the continent, and especially to its orological features. These causes of thermal conditions are very clearly illustrated on Map No. 4, at the end of this report, which map is a hypsometric sketch of the United States.

It will be observed that the point of lowest January temperature along the northern boundary-line of the United States is about where that line is crossed by the Red River of the North, the boundary between the State of Minnesota and the Territory of Dakota. It will also be observed that the mean January temperature rises from a little below zero at that point to 20° above zero in the northern part of the Territory of Idaho, and to 30° above zero where the boundary-line between Washington Territory and British Columbia touches Puget Sound.

The northwest winds which during the winter months blow over Montana and Wyoming, and which also sometimes reach Western Dakota and Nebraska and Northern Colorado, are comparatively warm winds, and evidently come from the Pacific Ocean. They are commonly known as Chinook winds. During certain seasons these winds have been so warm and so long continued as to melt the snows and to break up the ice in the Upper Missouri River and its principal tributaries. As the swelling waters, filled with broken masses of ice, flow onward, they at length reach a point in Dakota or Nebraska where the effect of the Chinook winds has not been felt, and where the Missouri River is solidly frozen. This, in certain instances, has caused widespread and damaging overflows.

It has been found that cattle do not suffer much from the severity of the temperature of the northern ranges so long as they are able to ob-

tain an abundance of nutritious food. This is always the case when the winter snows are light, or when they are blown off the high lands. The storms most disastrous to cattle are usually those which occur in the latter part of the winter or early spring, and when, after a rainfall, the grasses and shrubbery become covered with ice, and for several days the cattle are almost entirely cut off from their food supply. Losses from the severity of the weather occur in every State and Territory from Texas to Montana. Sometimes it happens, as has been the case during the past winter, that the losses from the severity of the weather have been even greater in Texas than in Montana. Range cattle usually have heavy coats of hair which, when saturated with rain and frozen, cause their sufferings to be much greater than when exposed to extremely cold but dry weather. The regions where losses on account of the weather are least are generally those where the cattle are best able to obtain sufficient food, and where they can readily find natural sheltering places from the violence of the winds.

THE RELATIONS OF THE RANGE AND RANCH CATTLE BUSINESS TO THE INTERESTS OF THE INDIANS.

The massacre of General Custer and his detachment on the 25th of June, 1876, at Little Big Horn, Dakota, near the present location of Fort Custer, led to the adoption of a more stringent policy on the part of the United States Government with respect to requiring the Indians to remain upon their reservations. During the five years following that tragic event our valiant little army, widely scattered over a vast area, had many bloody encounters with the Indians. At last the spirit of resistance was broken, and Montana, Idaho, and Dakota became comparatively safe for the introduction of the range-cattle business, which had already become known in Colorado and Wyoming as a highly attractive enterprise, and a speedy avenue to wealth. In the course of a few years, hundreds of thousands of cattle, almost all of them driven from the State of Texas as yearlings and two-year-olds, were quietly grazing throughout the former haunts of the buffalo, and the cowboy, armed and equipped, a bold rider, and valiant in fight, became the dominating power throughout vast areas where but a few years before the Indian had bidden defiance to the advancement of the arts of civilization. The question of Indian wars was thus forever settled in the region mentioned. Montana, Idaho, and Dakota now afford as much security for life and property as do the States on the Atlantic seaboard.

In the year 1864 a regiment of Colorado militia, under Colonel Chivington, attacked a camp of hostile Indians at Spring Creek, near Kit Carson, and administered to them a punishment which exerted an important influence in breaking the spirit of resistance in the more southerly portion of the range and ranch cattle area. In this section, as at the north, the land has been subdued to the purposes of the miner, the agriculturist, and the herdsman.

The only difficulties now experienced from the Indians result from their leaving their reservations in certain of the Territories. When thus permitted to wander off they frequently steal cattle from the herdsmen. Such incursions are usually made singly or in small bodies.

The National Convention of Cattlemen, held at Saint Louis, Mo., November 17 to 22, 1884, passed the following preamble and resolutions upon this subject:

Whereas the Indians in various sections have virtually been forced by the inadequacy of Government supplies to forage outside of their reservations; and

Whereas, in New Mexico, Arizona, Colorado, Wyoming, Nevada, Montana, and Eastern Oregon and Dakota permits are given each year to irresponsible bands of Indians to roam at will over the lands beyond the limits of their reservations, whereby great damage by fire and depredations is entailed upon the live-stock industry and hostile collision with rangemen made imminent: Now, therefore,

Resolved (1), That it is the sense of this convention that all the covenants of the Government with the Indians should be most scrupulously and honestly carried out.

Resolved (2), That the Indians named in the preamble, having been granted the exclusive use of vast areas of public domain, should be rigidly restricted to the limits of such reservations.

In view of the fact that the Government has adopted, and has long maintained, the policy of preventing hostilities with the Indians by locating them on reservations, upon which white men are not allowed to trespass, and of feeding and clothing the Indians so located, it appears but just to settlers and to those who are pursuing legitimate and useful occupations upon the public lands, whereby the people of the country are better supplied with cheap beef, that the desire of the cattlemen for the better protection of their interests should be respected.

THE OCCUPANCY OF LANDS BY HERDSMEN IN THE INDIAN TERRITORY AND ON INDIAN RESERVATIONS.

Important questions have arisen in regard to the grazing of cattle upon the lands of the Indian Territory and upon Indian reservations.

As shown on map No. 1, at the end of this report, more than three-fourths of the Indian Territory is now embraced in the great range and ranch cattle area of the United States. To a great extent the cattle business in that Territory is carried on by members of the various tribes, the same being either full-blooded Indians, or so-called "half-breeds," and by white men who, by marriage with Indian women, have become identified with the several tribes. But for many years a large part of the Indian Territory was unoccupied by the Indians for grazing or any other purpose. This led at first to the unauthorized, but permitted, occupancy of such lands by herdsmen, chiefly from Kansas and Missouri; but subsequently permits or licenses were granted by the Indians to herdsmen to graze their cattle upon such lands on payment of a stipulated rental to the several tribes to whom the lands belonged, or to whose use they had been dedicated and set apart by the National Government under treaty stipulations.

The Senate of the United States, on the 3d of December, 1884,

adopted a resolution inquiring what leases of lands have been made in the Indian Territory, or Indian reservations, for grazing or other purposes, the number of acres embraced by each of such leases, the terms thereof, and the persons, corporations, or associations named therein as lessees, also as to the circumstances under which such leases have been made. The Secretary of the Interior submitted a reply to this resolution under date of January 3, 1885.

He first states that in years past owners of cattle used quite extensively the unoccupied lands of the Indians by sufferance and without any compensation in the nature of rental, except presents to certain influential chiefs apparently for the purpose of winning their favor. It was found, however, that such unregulated occupancy led to waste, by the cutting and carrying off of large quantities of black-walnut and other valuable timber. Finally it was deemed best to allow the Indians to grant to responsible parties the exclusive right to graze cattle within specific limits. By this means waste was prevented, and lands not used by the Indians became a source of revenue to them.

Referring especially to the lands of the Cherokee Nation, the Secretary explains the nature of the tenure of such lands for grazing purposes as follows:

> The privilege to graze cattle is but a license and not a lease. It conveys no interest in the lands occupied. It is true that the Indians did attempt to make leases with a fixed period during which the parties would, if the power existed, have all the rights of lessees, but doubting the power to make, as well as the policy of such leasing, I declined to approve the same as a lease, but did treat them as amounting to a license, to be revoked by the Indians at will.

The view taken by the Secretary is that the privilege granted by the Indians to herdsmen simply amounts to the sale of a crop, and in support of the right of the Cherokee Nation to do this he says:

> Under the decisions of the courts as to the title by which they hold their lands, and the guarantee pledged them by the United States in the 16th article of the treaty of 1866, can any one question or doubt their right to make such a disposition of the grass growing on their lands as they have made, whether it is called a lease, license, or permit? The land is theirs and they have an undoubted right to use it in any way that a white man would use it with the same character of title, and an attempt to deprive the nation of the right would be in direct conflict with the treaty as well as the plain words of the patent.

During the year 1884 the following amounts were paid to the different tribes of the Indian Territory by individuals and corporations for the privilege of grazing cattle:

Cheyennes and Arapahoes	$77,351 60
Poncas	1,700 00
Otoes	2,100 00
Pawnees	4,500 00
Sac and Fox	4,000 00
Osages	13,160 00
Quapaws	3,000 00
Kiowas	2,080 00
Total	107,891 60

In addition to this the Cherokees have received $100,000 for grazing on the lands known as the Cherokee strip or outlet.

In his report the Secretary of the Interior, while expressing his approval of the policy of leasing, asserts that in his opinion the amounts paid do not constitute an adequate compensation. The payment to the Cheyennes and Arapahoes amounted to only 2 cents an acre, or an average of $12.33 per capita of these tribes. The Secretary asserts his belief that these lands might be leased at from 4 to 6 cents per acre.

It is a fact generally well known that the occupancy of lands in the Indian Territory by white men for grazing cattle, even under such licenses or permits as constitute them simply tenants by sufferance upon assigned lands, and the occupancy also of certain unassigned lands for the same purpose, the title of which lands is in the Government of the United States, has been regarded as a sort of precedent under which persons proposing to become actual settlers have sought to acquire homes upon such unassigned lands, which are commonly known as the "Oklahoma country." These pretensions have invariably been resisted by the National Government. The subject is now being investigated by the Senate Committee on Indian Affairs. As stated elsewhere, it is against the general policy of the Government touching the disposition of the public lands to lease them to cattlemen; therefore it has not been deemed proper to establish any precedent of that sort by leasing lands in the Indian Territory held in trust by the United States for the use of Indians and freedmen.

The granting of permits to graze cattle has also been practiced on the reservations north of the Indian Territory. To what extent this is done cannot here be definitely stated. In a recent letter to this office Mr. E. V. Smalley, of Saint Paul, says:

> There seems to be no general rule about leases. On one reservation I visited last summer I found the exclusive privilege of pasturing cattle was leased to a single individual; on another there were several leases, while on still another, that of the Flatheads, the agent did not even allow himself the privilege of having cattle on the range.

After considering the legal points involved in the various questions which had arisen with respect to the right of the Indians to permit white men to occupy a part of their lands for the grazing of cattle, and the right of the United States Government, under the provision of law, of treaty, and of conveyance, to permit white men thus to occupy the lands of the Indians or to obtain the necessary licenses, the Secretary of the Interior, in the document before referred to, clearly and forcibly discusses, first, the questions of property and proprietary rights involved in such leases, or licenses for grazing cattle on Indian reservations, and second, the question of policy as to whether the interests of the Indians and of the people of the United States demand that the Indians should be allowed to continue to own large and valuable tracts of land which are not needed by them, and which might be used for the settlement and development of the country.

Upon the first of these points the Secretary says:

The laws excluding white men from Indian reservations were enacted for the benefit of the Indians. In all cases where the Department has felt that the presence of white men on the reservation was injurious to the Indians they have been removed. In all cases where the Indians have asked their removal the Department has acceded to the wishes of the Indians and caused their removal, without reference to the question whether their presence was injurious or not. On the other hand, if the Indians favored their remaining, they have rarely been disturbed, and never, unless as before stated, their presence was clearly injurious to the Indians. This applies to the uncivilized tribes. But it is manifestly unfair to the Indians to exclude white men from their midst whose presence they desire and declare to be beneficial to them, and it should not be done unless their presence is clearly injurious to the Indians. It cannot be demonstrated that the permission given by the Indians to the owners of cattle to graze them on the Indian lands is injurious to the Indians. Isolation of the Indians from the white man was once thought necessary to protect him from the vices of civilization, but such isolation, even if desirable, has now become impossible. But such isolation is not desirable, and the Indian will become civilized much more readily when he comes in daily contact with white men, and certainly so if such contact is of his own choice and seeking. If the lands so occupied by cattlemen are not required for the grazing of the herds of Indians or for agricultural purposes, the Indians are not only benefited by contact with the whites, but by the compensation received for such grazing privileges.

Upon the second point above noticed the Secretary expresses the following opinion:

I do not propose that the Government shall confiscate these lands, or open them to settlement without proper compensation to the Indians, and while the title is held either by the Indians, or the Government for them, they should be prohibited from intrusion by unauthorized persons, and allowed to receive all the advantages that can be had from the ownership or occupation of such lands. But the interest of the Indians and of the people of the United States demands that they should not be allowed to own large and valuable tracts to the exclusion of the settlers, when such lands are not needed by the Indians. It is a misfortune to any country to have its lands held in large tracts by few owners, and it is the more so if held by owners who neither make use of it themselves nor allow others to do so.

The relation of Indian population to area of reservations is stated as follows with respect to the Indian Territory and the Indian reservations of Dakota and Montana, viz: Crow Creek, Devil's Lake, Fort Berthold, Lake Traverse, Old Winnebago, Ponca, Sioux, Turtle Mountain and Yankton in Dakota, and the Blackfeet, Crow, and Jocko in Montana, each of which is shown upon map No. 1, at the end of this report.

Reservations.	Area.	Population.	Population per square mile.
	Sq. miles.	*Number.*	*Number.*
Indian Territory	64,223	82,334	1.28
Reservations in Dakota	41,949	31,051	.74
Reservations in Montana	43,434	14,775	.34

How small relatively is this Indian population in proportion to the area of land occupied is indicated by the following comparison, show-

ing the population per square mile of the Indian Territory and reservations in Dakota and Montana and in certain of the States:

Reservations and States.	Population.	Reservations and States.	Population.
	Sq. mile.		*Sq. mile.*
Indian Territory	1.28	Louisiana	20.7
Indian reservations in Dakota	.74	Texas	6.1
Indian reservations in Montana	.34	Mississippi	24.4
Minnesota	9.80	Ohio	78.5
Iowa	29.3	Pennsylvania	95.2
Missouri	31.5	New York	106.7
Arkansas	15.1	Massachusetts	221.8

The Indian population of the United States is estimated by the Commissioner of Indian Affairs to be as follows:

The five civilized tribes of the Indian Territory:	
Cherokees	23,000
Creeks	14,000
Choctaws	18,000
Chickasaws	6,000
Seminoles	3,000
	64,000
All others	200,000
Total	264,000

Upon the subject of the reduction of the size of some of the principal reservations, Mr. E. V. Smalley says in a letter addressed to this office:

"Considerable new territory will be thrown open to the stock industry by the reductions of the large Indian reservations in Dakota and Montana.

"The great Sioux Reservation in Western Dakota could be reduced to one-third of its present dimensions without any injury to the interests of the Indians. Measures are already in progress for cutting down about one-half the area of the Crow Reservation in Montana, which is now about as large as the State of Connecticut. The portion to be released from Indian control is nearly all excellent bunch-grass range. The largest of all the existing reservations is that of the Black Feet, Piegans, River Crows, and other tribes lying between the Upper Missouri and the British boundary, which covers an area about equal to that of the State of Ohio.

"It is proposed by the Indian Commission to establish three small reservations within this Territory and to restore the remainder of the old reservation to the public domain. Nearly all the area which will thus be thrown open to white settlement consists of good grazing land. The Milk River Valley, which now lies wholly within the reservation, is especially valuable for range purposes, combined with farming by irrigation on the bottom lands near the river and its tributaries. In Wash-

ington Territory much good grass land has lately been added to the open range country by the reduction of the Moses Reservation.

"To confine the Indians in smaller areas than were assigned to them when they lived by hunting, is to put them in the way of becoming civilized. The game which once furnished them with food and clothing is now gone, and the nomadic life encouraged by the possession of enormous reservations is not favorable to the formation of habits of industry.

"With the opening of new ranges by the reduction of Indian reservations and the better stocking of the existing ranges, the cattle industry has a large field for further development."

Since the vast area over which the Indians once roamed for the mere purpose of hunting and following a nomadic life has been devoted to the use of white men engaged in industrial pursuits, and the buffalo has been driven off, a nomadic mode of life within that region is no longer possible; therefore reservations far beyond the needs of the Indians are to them a curse rather than a blessing. The sentiment that civilization has the right of way to the future on this continent, in its application to the reduction of the size of the great Indian reservations, appears to be dictated not only by sound views of public policy regarding the use of such lands by white men, but also by the moral obligation of according to the Indians just and humane treatment and placing them under such conditions as shall inculcate in them habits of industry and render them self-sustaining.

CAPACITY OF THE RANGES FOR GRAZING PURPOSES.

The capacity of the range and ranch lands of the United States for grazing cattle, differs widely in the several States, Territories, and sections as the result of differences in the quantity and quality of nutritious grasses produced, the water supply, and the extent to which natural shelter is available for cattle during storms. In Texas from five to thirty acres of land per head are required, and on the northern ranges almost the same differences are observable in different localities.

The ultimate limit of the capacity of the entire range and ranch cattle area of the United States for grazing, and the magnitude of its possible annual product can of course only be ascertained from the results of experience. It is evident, from the best available information, that the number of cattle on ranches and ranges in Texas might be greatly increased. Mr. George B. Loving, of Fort Worth, Tex., in reply to inquiries addressed to him by this office, expresses the opinion that by providing reservoirs, sinking artesian wells, and destroying the prairie dogs, which, in certain parts of the State, consume a larger quantity of the nutritious grasses than is consumed by cattle, the number of range and ranch cattle pastured in that State might perhaps be doubled.

It is impossible at the present time even approximately to estimate the proportion of the available range lands in the northern part of the

great dry area which are as yet unoccupied, or the extent to which the supply of grasses within the nominally occupied portions exceeds the supply necessary for the sustenance and fattening of cattle now grazing thereupon.

There appears to be a tendency on the part of those who have already occupied the ground to promulgate the idea that the ranges are fully stocked, and that there is, therefore, no room for additional herds. But intelligent observers who have prospected the different parts of the great cattle area north of Texas assert that two, three, or even four times the number of cattle now upon the ranges can be fed upon them.

Experience proves that cattle cannot advantageously graze more than 6 or 8 miles from water. The result is that vast areas now well grassed are of little value on account of their remoteness from water. The rendering of such lands available for the cattle business of course turns largely upon the practicability of procuring thereupon adequate supplies of water by means of artesian wells or by reservoirs for collecting rain-water.

PROFITABLENESS OF THE RANGE CATTLE BUSINESS.

The range cattle business of the western and northwestern portions of the great cattle area of course differs widely in the various localities and sections as to its profitableness. This is due to differences of conditions as to water supply, the quantity and quality of grasses, shelter, the number of calves produced, extent of winter losses, and the management of herds. As a rule the business has yielded large profits. This is clearly indicated by the large amounts of capital which have been invested in it during the last fifteen years. Many large fortunes have been made at the business within a comparatively brief period. Hundreds of men who embarked in the business a few years ago, with exceedingly limited means, are now ranked as "cattle kings." In certain instances women also have successfully engaged in the enterprise, and two or three of their number have already won the soubriquet of "cattle queen."

But like all enterprises yielding extraordinary results in the beginning, competition has in many sections already reduced the average profits approximately to the limits usually attained in commercial enterprises.

Mr. E. V. Smalley states that the usual profits on long-established ranges in Wyoming and Montana vary from 20 to 30 per cent. per annum on the capital invested. The following is from his statement, in Appendix No. 1:

"The average cost of raising a steer on the ranges, not including interest on the capital invested, is usually estimated by the large stockowners at from 75 cents to $1.25 a year. Thus a steer four years old ready for market has cost the owner $4 or $5 to raise. When driven to the railroad he is worth from $25 to $45. A recent estimate, approved

by a number of Wyoming ranchmen, places the profit at the end of the third year on a herd consisting of 2,000 cows with 1,000 yearlings, and 35 short-horn bulls, representing in all, with ranch improvements and horses, an investment of about $70,000, at $40,000."

The completion of the Northern Pacific Railroad, and the construction of other railroads in the Territories during the past two or three years, caused the price of range cattle to advance. Thus large profits were realized from the sale of herds.

Generally it is found that the average cost per head of the management of large herds is much less than that of small herds. The tendency in the range cattle business of late years has therefore been toward a reduction in the number of herds, and generally toward the consolidation of the business in the hands of individuals, corporations, and associations. It is stated that a single cattle company in Wyoming advertises the ownership of ninety different brands, each one of which formerly represented a herd constituting a separate property.

In opposition to the tendency toward consolidation, there is also the tendency toward separate ownerships on the part of homestead, preemption, and "desert-land" settlers, through the privileges afforded them under the public land laws of the United States.

THE BREEDING OF CATTLE ON THE NORTHERN RANGES.

As already stated, the northern ranges were originally stocked with young cattle, chiefly steers, driven from Texas. For several years it was supposed that Texas must continue to be almost exclusively the breeding ground, and that the northern ranges would for all time be the maturing and fattening ground for Texas cattle. But an important change has taken place in this regard. The raising of cattle on the northern ranges has met with an encouraging degree of success. At the present time many of the large cattle-owners and herdsmen of Montana, Dakota, Wyoming, Nebraska, and it is believed also of Colorado, are of the opinion that it is more profitable for them to raise their young cattle than to import them from Texas.

It is a well-established fact that cows in Texas produce more calves than cows on the northern ranges. The general opinion appears to be to the effect that about 90 per cent. of the cows of Texas drop calves every year. Wide differences of opinion are, however, expressed as to the increase on the northern ranges. The estimates vary from 50 to 70 per cent. of the number of cows. Hon. Martin E. Post, late Delegate in Congress, from Wyoming, estimates the average increase at from 50 to 60 per cent. of the total number of cows, and the increase from two-year-old heifers at 40 per cent. He adds, however, that every two-cattle raised in Wyoming are worth three raised in Texas.

While Texas cattle are largely purchased for stocking ranges at the north, the policy upon the well-established ranges appears to be quite

generally favorable to maintaining and increasing the stocks upon such ranges by keeping a sufficient number of cows and bulls for breeding purposes. This change of policy has led to a disposition on the part of the northern-range cattlemen to oppose the driving of young cattle from Texas to the north, which spirit of opposition has manifested itself in hostility to the proposition for the establishment of a national cattle-trail. In so far as such opposition is based upon considerations of a commercial nature, namely, the shutting off of the competition of Texas cattle-breeders from the northern ranges, it could not, of course, meet any co-operation whatever from the National Government, as that would be to favor the restriction of free competition in a legitimate trade. Nor does it appear to be becoming in the northern owners of herds to seek such protection so long as they enjoy the privilege by sufferance of allowing their cattle to graze upon the public domain.

The practical effect of breeding cattle on the northern ranges and of the efforts made to raise the grade of such cattle by the importation of high-grade bulls is seen in the improved quality of the beef cattle shipped to market from the northern ranges.

THE IMPROVEMENT OF THE BREED OF RANGE AND RANCH CATTLE.

During the last ten or twelve years the thought of the leading range and ranch cattle herdsmen, as well as of settlers, within the great cattle belt has been turned toward the subject of improving the quality of their stock. This has been accomplished, first, by the shipment of young "native" cattle of the States east of the Missouri River to the western and northwestern ranges, there to be matured and fattened for market. Efforts in the direction of improving the breed of range cattle have also been made by crossing the "native" and the Texas cows with bulls of the higher breeds of beef cattle, and chiefly with those of the Short-horn, Hereford, Polled Angus, and Galloway breeds. To what extent it is practicable to improve the grade of cattle on the range that are compelled to seek their own food and water, and such shelter against storms as they can find in valleys and mountain gorges and in the "coulees" of the broken ranges from the time they are dropped until they are driven to the railroad depot for shipment to market, and permanently to maintain such improvement under the conditions mentioned, is yet to be ascertained.

The following remarks upon this point by ex-Governor Crittenden, of Missouri, before the National Convention of Cattlemen held in Saint Louis in November, 1884, are of interest:

"The highest and most successful type of cattle is the product of the highest artificial condition, and you can only maintain this high standard by the continuance of the conditions. Our increasing population requires the observance of these conditions, and it is useless in the opinions of many to refine blood without at the same time supplying and

maintaining those artificial aids and surroundings so necessary to the growth, the comfort, and early maturity of the beast. You practical men must be the judges how far those aids must extend.

"I can only say if those aids are extended enough they will pay; if insufficient for the refined blood, loss will ensue. Palace-bred animals will wither in a wilderness or in an unprotected condition. Good mangers and good managers produce good cattle, provided good surroundings are had. You must in the growth of cattle do one of two things: breed a race of cattle fitted to the existing conditions or fit the conditions to our high-bred cattle. Which will pay is the question."

It seems to be evident that high-bred cattle, which owe their development by heredity to the care and protection which they have for many generations received at the hands of man, would be likely to retrograde if deprived of such conditions of care and protection upon the bleak ranges of the Northwestern Territories. This suggests the thought that the higher-bred animals are more likely to thrive under the management of actual settlers than under the management of the large herdsmen, for the reason that the settlers are usually prepared to shelter their cattle against the rigors of winter and to supply them with food at times when the natural supply is cut off by snow and ice. The large herdsmen, on the other hand, must, under existing conditions, leave their cattle to struggle for existence against all the adverse conditions of cold, and winds, and weather.

It is, however, the prevailing opinion that the efforts which are being made toward the improvement of the breed of range cattle will result in producing cattle greatly superior in quality, not only to the Texan, but also to the native stock, and marked by physical characteristics adapting them to life upon the range. Important advances have already been made in this direction.

Attention is invited to the interesting and valuable statements upon this subject by Hon. Martin E. Post, late Delegate in Congress from the Territory of Wyoming. Mr. Post refers particularly to the efforts in this direction on the northern ranges. (See Appendix No. 49.)

In Texas also great attention is paid to the subject of the improvement of the breed of range and ranch cattle, and with a gratifying degree of success. Attention is invited to a statement upon this subject by Mr. D. W. Hinkle, of San Antonio. (See Appendix No. 23.)

THE TEXAS CATTLE-TRAIL AND THE MALADY KNOWN AS TEXAS FEVER.

The driving of cattle from Texas to the northern ranges, to be there matured and fattened, is a business which has grown up chiefly during the last fifteen years. Such cattle consist mainly of young steers one and two years old, with a small proportion of heifers. Not only is it found to be a source of profit thus to utilize the extensive northern

ranges, but it has been ascertained that the Texas cattle, when driven north, increase in weight more rapidly than if raised and prepared for market on the Texas ranges. It is said that Texas steers driven north at the age of two years will weigh on the average, when four years old, about 200 pounds more than if kept in Texas until they have reached the same age. The quality of their beef is also greatly improved as the result of the migration. This is attributed to the fact that the natural grasses of the higher latitudes are more nutritious than those of Texas and therefore more fattening, and also to the stimulus of the high and dry areas of the northern ranges.

The cattle driven north from Texas embrace, first, beef cattle three and four years old and upwards, in condition for the markets, and, second, young cattle for stocking the northern ranges. The beef cattle ready for marketing are generally shipped at points in Western Kansas, over the Atchison, Topeka and Santa Fé Railroad and the Kansas Pacific Railroad to Kansas City, Saint Louis, and Chicago. The great herds of young cattle driven north to the ranges of Nebraska, Dakota, Montana, Idaho, and Wyoming have latterly been sold chiefly at Dodge City, in Kansas, and at Ogallala, in Nebraska.

Owing to the difficulty of driving cattle through sections of the country to any considerable extent settled and fenced in farms, the markets in Kansas for the sale of Texas cattle have always been located near the western line of settlements, but the influx of population has gradually crowded these frontier markets farther and farther west. In the years 1870, 1871, and 1872 the chief Texas cattle markets of Kansas were at Newton, in Harvey County, on the line of the Atchison, Topeka and Santa Fé Railroad, and at Abilene, in Dickinson County, on the line of the Kansas Pacific Railroad. Later those markets were located at Great Bend, on the Atchison, Topeka and Santa Fé Railroad, and at Ellsworth, on the Kansas Pacific Railroad, and still later they were moved to Dodge City, on the former railroad, and to Hayes City, on the latter. For several years past, however, Dodge City, in Kansas, and Ogallala, in Nebraska, on the line of the Union Pacific Railroad, have been the chief markets for the sale of Texas cattle for the northern ranges. From those points the young cattle have been driven to the ranges of Nebraska, Dakota, Colorado, Wyoming, Montana, and Idaho. The movement has varied in magnitude from year to year, but during the year 1884 it is said to have amounted to about 400,000 head.

THE TEXAS FEVER.

In common with almost all human enterprises, the most promising and beneficial not excepted, the movement of young cattle from the great breeding grounds of Texas to the vast northern ranges is beset by an adverse condition. In this instance it is the destructive bovine

disease commonly known as "Texas" fever, but also designated as "splenic" fever, and as "Spanish" fever.

It is proposed to consider this disease in its commercial aspect. Its cause and its pathology are as yet involved in mystery. Wide differences of opinion prevail in regard to both. It has been attributed to bacterial and bacillic organisms, but the existence of such supposed germs throws no light upon the subject, for it is an unsolved problem as to whether they are a cause or an effect of disease. A few general facts of commercial significance, touching the manifestation of Texas fever, appear, however, to be pretty well established. Its cause, whatever it may be, is undoubtedly persistent, and yet it is not invariable as to the circumstances attending its appearance. It is endemic rather than epidemic. The low lands, bordering upon the Gulf of Mexico, are undoubtedly the locality of its origin. This infected area is believed to embrace somewhat more than one half of the State of Texas. On map No. 1, at the end of the report, is shown the line which marks approximately, at least, the northern limit of this area.

So long as cattle born and raised in this Gulf section remain there, Texas fever is unknown among them. But when they are driven or transported to the northern part of Texas, or to the States and Territories of the northwest, they communicate the disease to the cattle of these more northern latitudes. Such infection of northern cattle appears to be invariably the result of their walking over, or feeding upon, the trails along which Texas cattle have passed. The Southern Texas cattle on their way north, in most cases, suffer a constitutional disturbance apparently attributable to change of food and climate, but it is said that usually they are not affected by what is distinctively known as "Texas" fever. This appears to involve the apparent paradox of their imparting a disease which they themselves do not have. Nevertheless there is a consensus of opinion among careful observers indicating that this is really the case, and the opinion appears to command popular belief.

The theory now generally held is, that the cause of the disease exists in a latent state in the cattle of Southern Texas, under conditions of climate and food which produce no impairment of the health of the animal, but that during migration towards the north, such latent cause of disease passes off in fecal matter, and is inhaled or taken into the stomachs of the northern animals when they feed upon the ground over which the Texas cattle have passed. In other words, the disease is believed to be an incident of a changed condition in Texas cattle by acclimatization. It is also a pretty well established fact that it is not, at least to any great extent, contagious. It is held by many that no animal which has taken the disease from the trail can communicate it to his fellows who have not been upon the trail.

The general testimony appears to be to the effect that Texas cattle

driven north have never communicated the disease to other cattle north of the South Platte River, nor to cattle in the State of Colorado. It has been assumed, therefore, that the disease is limited as to the sphere of its manifestation, both by latitude and elevation. It is also the accepted theory that the cause of the disease is eliminated from the systems of the Southern Texas cattle while "on the trail" from their place of nativity to the ranges of the north. It is also a well established fact that herds driven slowly are very much less likely to communicate the disease to the cattle in the northern part of Texas and to other northern cattle than when driven rapidly. Experience also proves that the disease is much more likely to manifest itself during the months of June, July, August, and September, than during the other months of the year. That cattle driven from the State of Texas gradually lose the power of imparting disease as they proceed north, and that the limits of the area of infection have been approximately determined, appear to be facts pretty well established.

Mr. N. J. Wilson, of Denver, who is extensively engaged in the range-cattle business, states that he has been engaged in that business along the line of the Kansas Pacific Railroad since the year 1869, but has never had among his herds a case of Texas fever caused by cattle driven from Texas, although he has handled large numbers of Texas cattle and allowed them to mingle freely with native cattle. Mr. Wilson also asserts it as his belief that cattle driven from Texas have never communicated the disease after crossing the Arkansas River at Dodge City, in the southwestern part of the State of Kansas.

The committee of the Wyoming Stock Growers' Association, charged with the duty of investigating the subject of Texas fever, reported at the recent annual meeting of the association, April, 1885, "that Texas cattle brought from the southern part of Texas are dangerous to our cattle for about sixty days from the time they leave their native ranges and that the same cattle can be brought among our stock after sixty days have elapsed with entire safety."

As somewhat more than sixty days are required in driving cattle from the southern part of Texas to Wyoming it is evident that there is no danger to be apprehended in Wyoming from Texas cattle when so handled. This fact is clearly stated by Hon. J. W. Carey, Delegate in Congress from Wyoming, and president of the Wyoming Stock Growers' Association, who says:

> In so far as my experience and that of others in the cattle business of Wyoming goes it is found to be perfectly safe to admit to our ranges Texas cattle which are driven on the trail. By the time they reach Wyoming and Nebraka, when moved in that way, they appear to lose entirely the liability to impart the socalled Texas fever.

THE PROPOSITION TO ESTABLISH A NATIONAL CATTLE TRAIL.

The extension of settlements in the State of Kansas has, as already stated, gradually forced the main line of the Texas cattle-trail westward to what has for several years past been known as the Fort Griffin and Dodge City trail, Dodge City, Kans., on the Atchison, Topeka and Santa Fé Railroad, and Ogallala, Nebr., on the Union Pacific Railroad, being the two chief markets for the sale of young Texas cattle intended for the northern and northwestern ranges.

But as the trail was forced westward by the settlement of the country, it was apprehended that eventually there might be a lack of the necessary water supplies for the cattle at proper intervals. Accordingly, it was deemed advisable by those who are interested in keeping a practicable trail open to secure the establishment of a national cattle trail, by inducing Congress to set aside a strip of public lands through the national domain in Kansas, Nebraska, and Dakota, such lands to be withheld from private entry, and held by the Government as a great free highway for the especial purpose of a cattle trail. It was assumed that the necessary action would also be taken whereby lands might be set aside for the purpose of such a trail through the Indian Territory and in the State of Texas. But in consequence of action taken by the State of Kansas in the month of February, 1885, inimical to the establishment of the proposed trail within her borders, a matter hereinafter set forth with some degree of particularity, it was deemed best by the advocates and promoters of the trail to locate it in the State of Colorado along the western boundary of the State of Kansas. A bill to this effect was accordingly introduced in Congress during its present session, by Hon. James F. Miller, of Texas. (See Appendix No. 30.)

It is said that the natural water supply along this proposed route is not usually sufficient for the needs of the cattle, but it is believed that by sinking artesian wells at suitable distances apart this objection can be overcome. It is also maintained that there will be much less danger of Texas fever by this route than by the route from Dodge City to Ogalalla, for the reason that the former will be located upon much more elevated ground. On map No. 1, at the end of this report, is delineated the old Texas cattle trail, known as the Fort Griffin and Dodge City trail, and also the route of the proposed trail around the western border of the State of Kansas.

THE COMMERCIAL IMPORTANCE OF THE TEXAS CATTLE TRAIL.

The most concrete and demonstrative expression of the importance of any commercial movement is of course the statistical record of its magnitude during a series of years extending up to the present time. Such a record of the movements of Texas cattle is presented in the annual report of the Board of Trade of Kansas City, as follows:

THE TEXAS CATTLE DRIVE.

Approximate statement of the number of cattle driven north each year from Texas, since the beginning of the movement.

Year.	Number.	Year.	Number.
1866	260,000	1877	201,150
1867	35,000	1878	265,646
1868	75,000	1879	257,927
1869	350,000	1880	394,784
1870	300,000	1881	250,000
1871	600,000	1882	250,000
1872	350,000	1883	267,000
1873	405,000	1884	300,000
1874	166,000		
1875	151,618	Total	5,201,132
1876	321,998		

This statement embraces both beef cattle shipped east from the western cattle markets of Kansas, and young cattle driven north to stock northern ranges. This was more particularly the case during the earlier years, but it is stated by Mr. W. H. Miller, secretary of the Kansas City Board of Trade, Appendix No. 50, that "during the last six or seven years nearly all of the drive has been made up of stock cattle for ranges north of Texas." According to the best estimate which can now be made, there have been about 2,000,000 young cattle driven from Texas to northern ranges during the last seven years, which at $15 a head would amount to $30,000,000. The "drive" of the year 1884 was about 300,000, which at $17 a head amounted to $5,100,000. These figures, the best which can be obtained, are of course only rough approximations. They clearly indicate, however, a large demand at the north for young Texas cattle, and a supply adequate to meet such demand. The movement has been about as regular as commercial movements are generally; the tendency, on the whole, being in the direction of progress. It is asserted, upon apparently good authority, that fully one-half of the blood of all the cattle on the northern ranges to-day is of the Texas strain. Many persons largely engaged in the cattle trade at the north and the cattle raisers of Texas generally, maintain that Texas must in the future hold the position of a breeding ground, and the northern ranges that of a maturing and fattening ground. But that view is controverted by a majority of the herdsmen of the north, and especially by those engaged in the business of raising cattle and of improving the breed of northern range cattle. The question as to the reasonableness and propriety of establishing the proposed cattle trail depends also somewhat upon the—

QUANTITY OF LAND NECESSARY FOR THE PROPOSED TRAIL.

The public lands of Texas belong to that State. The quantity of land which the Government of the United States is asked to donate for the purpose of establishing the proposed trail may therefore be assumed to *begin at the southern* border line of Colorado, and to extend to the

northern border line of the United States. It is proposed that it shall be of variable width, from 200 feet at crossing places for "native cattle," to 6 miles at the widest part. It must of course have sufficient width not only for a line of travel, but also for a feeding ground of cattle "on the trail." Such a trail of an average width of 3 miles, and extending to the Dominion of Canada, as delineated on map No. 1, would be 690 miles in length and have an area of 2,070 square miles, or 1,324,800 acres. If it should be established only from the Southern boundary of Colorado to the parallel of 43° north, which constitutes the northern border line of the State of Nebraska, it would have a length of 420 miles and an area of 1,260 square miles, or 806,400 acres.

The proposed trail would be located chiefly upon "range" land not available for agricultural purposes, other than grazing. The intrinsic value of such lands, which now belong to the Government, cannot be accurately stated, but it is comparatively small.

That the quantity of land which the advocates of the proposed cattle trail ask Congress to set aside for that purpose is not immoderate, comparatively speaking, is clearly indicated by the following table from the annual report of the Commissioner of the General Land Office for the year 1884, showing the number of acres of land conceded by Congress to States and corporations for railroads and for military wagon-roads from the year 1850 to June 30, 1884.

Statement exhibiting land concessions by acts of Congress to States and corporations for railroad and military wagon-road purposes from the year 1850 to June 30, 1884.

States.	Number of acres certified or patented up to June 30, 1884.
FOR RAILROADS.	
Illinois	2,595,053.00
Mississippi	935,158.70
Alabama	2,884,074.03
Florida	1,760,834.98
Louisiana	1,072,406.47
Arkansas	2,516,525.96
Missouri	1,395,429.87
Iowa	4,706,618.39
Michigan	3,229,010.84
Wisconsin	2,874,088.79
Minnesota	7,801,349.15
Kansas	4,638,210.67
	36,408,760.85
Corporations	11,879,027.01
Total railroad grants	48,287,787.86
Deduct amount of land declared forfeited by Congress	667,741.76
	47,620,046.10
FOR WAGON-ROADS.	
Wisconsin	302,930.96
Michigan	221,013.35
Oregon	1,258,237.10
	1,782,181.41
	47,620,046.10
Total	49,402,227.51

An idea of the reasonableness of the proposition to establish the proposed trail may be derived from the following statement, showing the quantity of lands granted by the Government in aid of the construction of all of those railroads, which are commonly designated as "Pacific Railroads," and the quantity which would be required for the proposed cattle trail.

The quantity of land granted by Congress in aid of so-called Pacific railroads is shown as follows:

Number of acres of land patented to June 30, 1883, by so-called Pacific railroad companies which have received grants of land from the National Government, and the amount of bonds issued to certain of such companies by the United States.

[Corrected by Commissioner of General Land Office to June 30, 1884.]

Name of company now operating the railroads which have been aided by the National Government.	Lands patented.	Bonds issued under grants.
	Acres.	
Northern Pacific Railroad	746,390	.....
Union Pacific Railroad (including Denver Pacific and Kansas Pacific)	3,433,460	$33,539,512
Central Pacific Railroad (including Western Pacific and California and Oregon).	2,623,008	27,855,680
Atchison, Topeka, and Santa Fé Railroad	2,935,163	.....
Central Branch of Union Pacific Railroad *	187,448	1,600,000
Sioux City and Pacific Railroad	41,398	1,628,320
Southern Pacific Railroad of California (main and branch lines)	1,192,702	....
Oregon and California Railroad	322,063	.....
Atlantic and Pacific Railroad	959,207	.....
Missouri, Kansas, and Texas Railroad	984,106	.....
Saint Louis, Iron Mountain, and Southern Railroad	1,382,410	.....
Total	14,807,355	64,623,512

* Now operated by the Missouri Pacific Railway Company.

The comparison which the foregoing tables are intended to present is summarily exhibited thus:

	Acres.
Total number of acres granted to States and corporations in aid of railroad construction	47,620,046
Total number of acres granted to so-called Pacific railroads	14,807,355
Granted to the Union Pacific Railroad Company	3,433,460
Granted to the Central Pacific Railroad Company	2,623,008
Granted to the Atchison, Topeka and Santa Fé Railroad Company	2,935,163
Estimated number of acres required for a cattle trail from Texas to the northern border line of the United States	1,324,800
Estimated number of acres required for a cattle trail from Texas to the northern boundary of the State of Nebraska	806,400

It appears, therefore, that the quantity of land required for a cattle trail of an average width of 3 miles, extending from the southern border of Colorado to the northern boundary line of the United States, would constitute only 2.78 per cent. of the total number of acres granted to and patented by railroad companies, and only 9.35 per cent. of the total number of acres patented by so-called Pacific railroad companies.

It would also be less than one-half the number of acres patented by either the Union Pacific, the Central Pacific, or the Atchison, Topeka and Santa Fé Railroad Companies.

Evidently the driving of young cattle from Texas to the ranges of the north is a commercial movement of great importance. A very large proportion of all the cattle now on the northern ranges came from Texas or are of the Texas breed. The suppression of the movement from Texas by trail would check a legitimate and beneficial competition between the cattle-breeders of the north and of the south, and therefore tend to enhance the price of beef. It would also, in a high degree, operate to the detriment of the enormous cattle interests of the great State of Texas. It appears, therefore, upon purely commercial considerations, greatly to the interest of the whole country that the Texas cattle trail should under proper legislative provisions and safeguards be kept open. Any obstacle to the traffic in cattle between Texas and the northern ranges, other than the restraints imposed by quarantine laws, would of course be in derogation of the provisions of the Constitution of the United States securing the freedom of commerce among the States.

The several trails and Texas cattle markets of Kansas hereinbefore mentioned are delineated on map No. 1, at the end of this report.

The propriety of setting aside even so large a quantity of land as that hereinbefore mentioned for the purposes of a cattle trail also involves a question of policy regarding the disposition of the public domain. That is eminently a question for legislative consideration and determination, and it is one therefore which the chief of the bureau does not consider that he is called upon to discuss. All that he has here attempted to do has been to set forth what appear to him to be the facts of chief importance in this case. He has viewed the subject only from a commercial point of view, and in that light has not hesitated to express his conviction of the importance of maintaining inviolate the principle of the perfect freedom of commercial intercourse among the States and Territories of this country.

OBSTACLES TO THE ESTABLISHMENT OF A NATIONAL CATTLE TRAIL PRESENTED BY THE QUARANTINE LAWS OF KANSAS AND COLORADO.

Since the introduction of the bill in Congress, in February, 1885, for the establishment of a national cattle trail, apparently insuperable obstacles to the consummation of that project have been presented in the quarantine laws recently passed by the States of Kansas and Colorado. Those enactments appear to constitute an absolute embargo against driving or transporting by rail Texas cattle into or across those States.

The alarm caused by the losses incurred in Kansas from Texas fever during the last three or four years gave rise to a pronounced senti-

ment in favor of quarantining the entire State against Texas cattle. Accordingly, in the month of February, 1885, the Legislature of Kansas, then in session, instructed the United States Senators and requestep the Representatives in Congress from that State to oppose the establishment of a national cattle trail within its borders. This, as before stated, led to the change in the route of the proposed trail, and to the location of it in the State of Colorado, along the Kansas border line. At the same time there was pending in the Kansas Legislature a bill for the purpose of quarantining the entire State against Texas cattle. This bill became a law on the 12th of March, 1885.

THE QUARANTINE LAW OF THE STATE OF KANSAS.

The quarantine law of the State of Kansas provides that—

In the trial of any person charged with the violation of any of the provisions of this act, and in the trial of any civil action brought to recover damages for the communication of Texas, splenic, or Spanish fever, proof that the cattle which such person is charged with driving or keeping in violation of law, or which are claimed to have communicated the said disease, were brought into this State between the first day of March and the first day of December of the year in which the offense was committed, or such cause of action arose, from south of the thirty-seventh parallel of north latitude, shall be taken as *prima facie* evidence that such cattle were capable of communicating and liable to impart Texas, splenic, or Spanish fever, within the meaning of this act, and that the owner or owners, or persons in charge of such cattle had full knowledge and notice thereof at the time of the commission of the alleged offense.

The violation of the act is made a misdemeanor, punishable by a fine of not less than $100, nor more than $2,000, or by imprisonment in the county jail not less than thirty days and not more than one year, or by both such fine and imprisonment.

The thirty-seventh parallel of north latitude is the dividing line between Kansas on the north and Texas and the Indian Territory on the south. This provision, therefore, not only places the whole State of Texas, but also the Indian Territory, under the ban of quarantine, between the first day of March and first day of December, embracing the entire period during which cattle are driven from Texas to the northern ranges. It is not presumable that the great State of Kansas would by any unfair or disingenuous exercise of her undoubted police powers forbid a legitimate commerce in Texas cattle within her borders, or the passage of such cattle across any portion of the State. Whatever differences of opinion may exist as to the expediency of the action of the legislature of Kansas upon this subject, the character of the people of that State and the well-known history of their struggles for the establishment of the principles of popular rights forbid the supposition that such action is induced by any other consideration than a conviction of the necessity of meeting a great emergency of a sanitary nature, and therefore that their quarantine law is designed to protect and not to oppose the public interests. Nor is it presumable that the people of

Kansas will hesitate to modify or abolish such legislation if at any time they shall become convinced that their action in regard to Texas cattle is unnecessary or ill advised. The quarantine law of Kansas may be found in Appendix No. 16.

THE QUARANTINE LAW OF THE STATE OF COLORADO.

The quarantine act of the State of Colorado, which became a law on March 20, 1885, provides that—

> It shall be unlawful for any person, association, or corporation to bring or drive, or cause to be brought or driven, into this State, between the 1st day of April and the 1st day of November, any cattle or horses from a State, Territory, or country south of the thirty-sixth parallel of north latitude, unless said cattle or horses have been held at some place north of the said parallel of latitude for a period of at least ninety days prior to their importation into this State, or unless the person, association, or corporation owning or having charge of such cattle or horses shall procure from the State veterinary board a certificate or bill of health to the effect that said cattle or horses are free from all infectious or contagious diseases, and have not been exposed at any time within ninety days prior thereto to any of said diseases.

It is also provided that—

> Any person violating the provisions of this act shall be deemed guilty of a misdemeanor, and shall, on conviction, be punished by a fine of not less than five hundred ($500) or more than five thousand dollars ($5,000), or by imprisonment in the county jail for a term of not less than six months and not exceeding three years, or by both such fine and imprisonment.

The 36th parallel of north latitude is 1 degree, or 69½ statute miles, south of the southern boundary line of the State of Colorado. The quarantine law of Colorado may be found in Appendix No. 17.

THE QUARANTINE LAW OF THE TERRITORY OF WYOMING.

The Territory of Wyoming has, by its stock laws, provided for a territorial veterinarian, with ample authority for the prevention of the spread of disease within her borders. The governor of the Territory is also clothed with ample authority to prevent the introduction of any and all contagious bovine diseases from any other Territory or State, whenever convinced that the conditions exist which render such action necessary. These provisions of law may be found in Appendix No. 18.

QUARANTINE LAW OF NEBRASKA.

The legislature of the State of Nebraska, at its recent session, enacted a quarantine law with respect to the prevention and suppression of cattle diseases quite similar in its general features to that of the Territory of Wyoming. This act, which went into effect March, 1885, provides for the creation of the office of State veterinarian, and of a State live-stock sanitary commission, charged with the duty of attending to all matters relating to cattle diseases. Whenever, in the opinion of the commission, it is necessary to establish quarantine regulations, it is

made their duty to notify the governor of the State, who is thereupon required to issue his proclamation announcing the boundaries of the quarantine and all regulations relative to the subject. The enforcement of quarantine against the disease known as Texas, splenic or Spanish fever, differs in no respect from the provisions of law relating to the subject of quarantine generally. The law appears to be carefully guarded against any excessive or unnecessarily injurious exercise of power.

QUARANTINE LAW OF THE TERRITORY OF NEW MEXICO.

The Legislative Assembly of the Territory of New Mexico passed an act, approved March 19, 1884, providing for the appointment at convenient points within the Territory, as near as possible to the frontier, of inspectors of cattle, whose duty it is to inspect all cattle destined for introduction into the Territory. It is also made unlawful for any person or corporation to drive or transport, or cause or procure to be driven or transported, into the Territory of New Mexico any cattle which are, or within twelve months have been, affected with or exposed to any contagious or infectious disease, or which within such period have been driven or transported from or through any district of country where such disease is known to exist at the time of such driving or transporting, or without the certificate of an inspector of cattle.

By an act approved a few days later, namely, April 3, the governor of the Territory was authorized from time to time to suspend by proclamation the operation of the act of March 19, whenever in his judgment the circumstances and public interests warrant and require him to do so, and providing also that the act of March 19 should be suspended in its operation, until such time as the governor might by his proclamation put it into operation and effect. These two acts, therefore, make the whole matter of enforcing quarantine measures in New Mexico as against Texas cattle one of administrative responsibility. The people of Texas appear, however, to regard the action of New Mexico as somewhat inimical to their interests.

REMARKS IN REGARD TO THE QUARANTINE LAWS OF KANSAS, COLORADO, NEBRASKA, WYOMING, AND NEW MEXICO.

The propriety of introducing into a quarantine law positive administrative measures with respect to the conditions of time and space, as has been done by the States of Kansas and Colorado, is of course a debatable question. The State of Nebraska and the Territory of Wyoming have pursued the more usual and cautious policy of throwing upon responsible executive officers the whole duty of administering certain explicit statutory provisions relating to the subject of quarantine. To such officers is also confided the duty of determining when quarantine regulations shall be enforced and when discontinued. They are also empowered to prescribe the particular States or Territories, or parts

thereof, which shall be placed under the ban of quarantine. This provision appears to be especially wise and provident, in view of the apparently well-established fact that only Southern Texas cattle are liable to impart the dreaded disease, and that the cattle of Northern and Northwestern Texas are as free of such taint as are the cattle of Kansas and Colorado.

As before stated, the quarantine law of New Mexico throws the whole responsibility of its enforcement upon the governor, as he may, in his judgment, from time to time, deem such action necessary and proper.

FACTS BEARING UPON THE GENERAL QUESTION AS TO THE SHIPMENT OF TEXAS CATTLE TO THE NORTHERN RANGES.

The whole subject of the "Texas cattle drive," and the quarantine laws which have been adopted for restraining it, has here been viewed historically and in its commercial aspects. It is a subject involving antagonisms of interest and differences of opinion upon which it would not be proper in this connection to attempt to pass judgment.

It appears to be a fact beyond all controversy that very many of the present occupants of the northern ranges, constituting probably more than a majority of their total number, are openly and earnestly opposed to the driving of Texas cattle to the northern ranges upon considerations of a purely commercial and economic nature. First, they do not wish to be confronted by the competition of the Texas cattle in their midst. Second, they find that the Texas cattle in very many places "eat out" the grasses upon ranges which for years past they have regarded, as by prescriptive right, their own. Third, the contact of their herds with the Texas herds tends to depreciate the breed of their cattle, owing to the fact that the Texas herds usually contain a certain proportion of Texas bulls. Cows and bulls usually intermingle freely on the ranges. This, of course, interferes with the efforts of the northern herdsmen to improve the breed of their cattle by importing at considerable expense high-grade bulls. But the fact that the herdsmen of Texas are also making strenuous efforts to improve the breed of their catttle promises in the future to meet that objection.

The fact of the prevalence of a very decided opposition among the northern herdsmen to the continuance of the Texas cattle trade, upon purely commercial grounds, is clearly indicated by the following remarks made before the National Cattlemen's Convention held at Saint Louis in November, 1884, by Mr. A. T. Babbitt, a delegate from Wyoming:

> We came from Wyoming objecting to the idea of a trail. Our objection has, to some extent, been misunderstood. We did not object to it on the ground of the liability of infection, or of cattle disease, because cattle driven from the south have never hurt us so far north, and we are not afraid of them. We have objected to the trail simply on the ground of safety of our investments. We have believed that if Government made an appropriation whereby a public highway for cattle was to

be established, over which the immense herds of surplus cattle from Texas were to be invited to come and overwhelm us, we were in danger of obliteration and extinction. Now, we have said to our Texas friends, "You favor us in a measure which is very dear to us, and we will favor you with all earnestness and in good part, in favor of every pet scheme from the south." We have made that proposition in good faith, and I say in behalf of my associates from the north, at least from Wyoming Territory Stock-Growers' Association, that we will carry out that in good faith. The idea is, if we can get a fair control of the ranges we desire to occupy, we will not object. We want their cattle. We have made our money on Texas cattle—more than on any others.

This statement is admirable for its candor, but it is in the nature of a proposition to refrain from opposing the prosecution of a legitimate commercial enterprise, upon the condition that the friends of that enterprise would lend their influence in aid of securing for the northern herdsmen the leasing of the public lands, a measure which few besides those personally interested in the adoption of the measure would regard as justifiable upon sound views of public policy.

But, on the other hand, the movement of young Texas cattle to the northern ranges is favored generally by persons engaged in stocking new ranges at the north, or who, from the force of circumstances or of habit, regard that method of replenishing their herds as preferable to the plan of keeping cows and engaging in the breeding of cattle in that section. The people of the State of Texas are, of course, unanimous in favor of the "trail." It is with them a matter of great commercial importance, in view of the fact that Texas is essentially a cattle-breeding State.

Already the quarantine laws of Kansas and Colorado have resulted in serious injury to the State of Texas. Mr. D. W. Hinkle, of San Antonio, states, under date of March 28, 1885, that a year ago more than $1,000,000 worth of cattle had been contracted for in Texas to be driven north, but that $75,000 would cover all the contracts to date for the season of 1885. He adds that bankruptcy threatens many of the herdsmen of Texas. The value of all property in that State has been injuriously affected and values generally disturbed in consequence of the quarantine laws of Kansas and Colorado.

Men engaged in the cattle business in Texas bitterly denounce the quarantine laws of Kansas and Colorado, and do not hesitate to declare their belief that such laws amounted to the suppression of the trail by an indirect and unjustifiable expedient.

It is, of course, to the interest of the great majority of the people of almost every State that they shall be enabled to purchase beef at the cheapest possible rate, and this is of course dependent largely upon the fullest and most unconstrained competition in the cattle trade.

From all the information which this office has been able to collect in regard to Texas fever, it would appear that the dangers to be apprehended from it have been considerably exaggerated, and that the Texas cattle trail might safely be continued under proper sanitary regulations.

CONCLUDING REMARKS IN REGARD TO THE QUARANTINING OF TEXAS CATTLE.

The large and flourishing trade which has existed for many years in the sale of young Texas cattle at the North to stock the ranges of Kansas, Colorado, Wyoming, Montana, Dakota, and Nebraska has, in years past, been highly promotive of the range and ranch cattle interests of those States and Territories, as well as of the State of Texas. No sort of governmental restraint could properly be interposed to the continuance of that business, in order to meet objections of a purely commercial nature, such as those to which allusion has herein before been made. The organic law of the United States establishes throughout all parts of the country absolute freedom of commercial intercourse. Under this beneficent provision, an internal commerce has sprung up many times greater in value than our foreign commerce and there has been a development of industry unparalleled in the history of the world. That the freedom of commercial intercourse should be invaded or even threatened by indirection, through the exercise of the police powers of a State for sanitary purposes, is repugnant to the cherished love of liberty which has from the beginning characterized the people of this country. It is essential to beneficent administration that police powers, like all governmental powers, shall be exercised frugally and with sound wisdom and discretion. Those powers, in their application to sanitation, are designed to meet the exigencies of epidemics and unusual or extraordinary visitations, and not to protect against the ordinary and usual hazards of life. Pushed to the extreme, the exercise of such powers might arrest all enterprise and stop the wheels of commerce. It is inconceivable that the people of any State of the Union would countenance such an unwise and unfair exercise of power, if convinced that it was not abundantly justified by an emergency demanding the interposition of a sanitary rule restrictive of commercial freedom. Any such action would meet the condemnation of the whole country, for it would be opposed to the fundamental principles of our institutions, and it would go in the face of all right, and all justice, and all magnanimity.

THE TRANSPORTATION OF TEXAS CATTLE NORTH BY RAIL WITH SPECIAL REFERENCE TO TEXAS FEVER.

Ever since the completion of the Missouri, Kansas and Texas Pacific Railroad and the Saint Louis, Iron Mountain and Southern Railroad now embraced in the "Missouri Pacific System," the beef cattle of Texas have been transported over those roads to Saint Louis and Chicago, and the evil results of such transportation from Texas fever have not been of any great moment, in a commercial sense. For several years Texas cattle have been allowed freely to mingle with native cattle at the Union Stock Yards of Chicago, the largest cattle market in the world.

and the cases of Texas fever resulting from such contact have been comparatively very few.

During the last two years the Missouri Pacific Railway Company and the Atchison, Topeka and Santa Fé Railroad Company have engaged in the traffic of transporting young Texas cattle to the northern ranges in competition with the movement by trail.

Since April, 1883, about 100,000 young cattle have been brought from Southern Texas over the lines of the Missouri Pacific system to points in Northern Texas and thence driven over the trail to the ranges of the northwestern counties of Texas, and also to the ranges of the northwestern territories. Cattle have also been transported over these lines and their connections as far north as Ogallala, Nebr. The facts in regard to these movements are very clearly set forth in a statement made to this office by Mr. George Olds, general traffic manager of the Missouri Pacific Railroad. (Appendix No. 31.)

The first shipment of Texas cattle over the line of the Atchison, Topeka and Santa Fé Railroad was made in the year 1884. During that year about 30,000 head were moved north over the line of that railroad from Santa Fé and other points in New Mexico. Mr. J. F. Goddard, traffic manager, states that, with no unfavorable legislation, about 75,000 cattle will probably be so transported during the year 1885. (See Appendix No. 33.)

The opinion appears to be quite general that cattle brought north by rail are much more liable to impart the disease than if driven over the trail. This impression prevails throughout Kansas, Nebraska, Dakota, Colorado, and Wyoming.

The prevailing opinion upon the subject in Wyoming is very clearly expressed in the following statement by Hon. J. W. Carey, Delegate to Congress from that Territory and president of the Wyoming Stock-Growers' Association:

> In so far as my own experience and that of others in the cattle business in Wyoming go, it has been found to be perfectly safe to admit to our ranges Texas cattle which are driven on the trail. By the time they reach Wyoming and Nebraska, when moved in that way, they appear to lose entirely the liability to impart the so-called Texas fever. We of the northern ranges have not the slightest fear of their introduction among our cattle when driven, but shipments of Texas cattle into Wyoming by rail during the year 1884, taught us by dearly-bought experience that such shipments cannot with safety be permitted. In every instance where the Texas cattle brought by rail came in contact with the northern-range cattle they imparted to them the Texas fever, and even to Texas cattle which had been wintered in Wyoming. The losses in Wyoming, Colorado, and Nebraska amounted to fully one hundred thousand dollars, and would have been much greater but for the enforcement of the quarantine laws of Wyoming Territory, which are very stringent and effective.
>
> This result of bringing Texas cattle north by rail was predicted by two eminent veterinarians, Dr. James D. Hopkins, Territorial veterinarian of Wyoming, and Dr. Law, of New York. These gentlemen affirmed that the cause of Texas fever existed in a latent state in the cattle of Texas, but that during the period of from three to six months required in driving the cattle to northern ranges they became freed of the liability to impart that disease, whatever it may be, the theory being that it passes

off in fecal matter. The northern range men were inclined to ridicule this hypothesis, but they learned to their sorrow that it was correct. The same experience in regard to shipments of Texas cattle into northern ranges by rail was had in Colorado, in Kansas, in Nebraska, and in Dakota, and I am informed that in these States and Territories the legislature now, or very recently in session, have been considering the question of stopping such shipments by rail. I am not now informed as to the action which has been taken by those legislatures. The opinion of Dr. Hopkins may be found in Appendix No. 19.

The traffic manager of the Missouri Pacific Railway system, and of the Atchison, Topeka and Santa Fé Railroad appears to be firm in the belief that by means of suitable quarantine grounds they will be able to overcome the present objection to shipments by rail. The enterprise of shipping Texas cattle to the northern ranges by rail must be regarded as in a tentative stage, its feasibility being dependent upon the results of experience.

Evidently the transportation of cattle from Texas to the northern ranges offers certain very marked economic and commercial advantages over the movement by trail. With respect to the consideration of time, it is the difference between 20 miles an hour and 10 miles a day. The trail also has its peculiar advantages in cost. The herdsmen of Texas appear to be of the opinion that their interests would be best subserved by having the option of either mode of moving their cattle north.

THE RANGE AND RANCHE CATTLE BUSINESS IN ITS RELATIONS TO THE PUBLIC DOMAIN.

As before stated, the immense herds of cattle which are now spread over a large part of the Western and Northwestern Territories, graze chiefly upon public lands of the United States, but merely by sufferance and not by virtue of any grant or expressed permission from the Government. The laws of the United States in regard to the disposition of the public lands constitute a barrier to the purchase of such lands in quantities sufficiently large for the conduct of the range and ranche cattle business. This has resulted from the fact that the public sentiment of this country is, and always has been strongly opposed to the disposition of the public lands in large quantities, either to one person or to corporations. The genius of our institutions is in favor of comparatively small holdings, and the result of practical experience under this policy since the first settlement by colonists upon our shores, has caused it to become a cherished feature of our method of disposing of the public lands.

The subject here under consideration suggests a brief reference to the provision of law under which title to the public lands held by the United States has been and may now be acquired.

Formerly, whenever public lands were exposed for sale, the title of pre-emptors was first secured. After that sales were made to any and

to all purchasers and to any extent. Under existing laws, however, title to the public lands can be acquired only as follows:

1. Lands which, having been offered at public sale, remain unsold, if not afterward reserved or withdrawn from market, are open to private entry in any quantity at the established price per acre, by legal subdivision.

2. Lands may be purchased at public auction by the highest bidder, when offered pursuant to proclamation of the President or under public notice in accordance with directions from the General Land Office.

3. By pre-emption right or the right of a resident upon public land to purchase within a given time a quantity not exceeding one-quarter section.

4. By homestead entry or the right granted to actual settlers upon the public land, possessing certain qualifications, who comply with prescribed conditions as to residence, cultivation, &c., not to exceed 160 acres, without payment except the fees and commissions required by law.

5. Under the timber-culture laws, by planting and cultivating trees, so that at the end of eight years or at the time of making proof not less than six hundred and seventy-five trees are growing on each acre of 10 acres of a quarter section of land. The fees and commissions prescribed by law are the only charges for this class of entries.

6. Under the provisions of the timber and stone act of June 8, 1878, a person or an association of persons may obtain title to not more than one-quarter section of land that is unfit for cultivation and more valuable for timber or stone, by paying therefor at the rate of $2.50 per acre, after complying with the law as to proof, &c. This method of obtaining title to public lands is limited to the States of California, Oregon, and Nevada, and Washington Territory.

7. By entry under the desert-land act to the extent of 640 acres of land, on which no crops will grow without artificial irrigation. At any time within three years the party making such entry must produce satisfactory evidence that he has introduced water upon each of the smallest legal subdivisions, or portion of 40 acres or less, in sufficient quantities to accomplish the reclamation thereof. Land that will produce a crop of hay without irrigation is not deemed to be desert land.

8. By the provisions of the mining laws a person or association of persons may locate a lode claim not exceeding 600 feet in width by 1,500 feet in length, at $5 per acre. Placer-mining claims may be located to an extent not exceeding 160 acres, subject to certain regulations.

9. An individual may enter not to exceed 160 acres of land under the coal land law, and an association of persons may enter not to exceed 320 acres. An association of not less than four persons who have expended not less than $500 in working and improving a coal mine may enter not to exceed 640 acres. Coal lands within 15 miles of a completed

railroad are sold at $20 an acre and at a distance of more than 15 miles, $10 per acre.

The entering or obtaining of titles to land under the timber and stone act and settlement and mining laws is limited to citizens of the United States, or persons who have declared their intention to become such.

10. In addition to the methods hereinbefore stated, land may be obtained in any quantity by military bounty-land warrant and the various kinds of scrip locations.

At the end of this report may be found the following-described tables, furnished to this office by the Commissioner of the General Land Office:

Statement of the number and area of original and final homestead entries made from the date of the passage of the act May 20, 1862, to June 30, 1884, inclusive, Appendix No. 42. Statement of the number and area of the original and final desert land entries made under the act of March 3, 1877, from July 1, 1877, to June 30, 1884, Appendix No. 43. Statement showing the number of timber-culture entries, with areas, made in the several States and Territories, under the timber-culture acts of March 3, 1873, and June 14, 1878, to June 30, 1884, inclusive, Appendix No. 44. Statement showing the number of acres of land surveyed and unsurveyed in the several States and Territories, to June 30, 1884, Appendix No. 46. Statement of the number of acres certified or patented for railroad purposes up to June 30, 1884, Appendix No. 45.

The State of Texas, after permitting the acquisition of large tracts of her public lands by individuals and companies has finally been brought to see the wisdom of adopting a policy in favor of the settler, similar to that pursued by the Government of the United States. In commenting upon this subject, Mr. George B. Loving, of Fort Worth, Tex., a gentleman employed as an expert by this office, says:

> The number of acres anyone can now purchase is limited to two sections, and it is expected that the legislature, now in session, may cut this quantity in two or more fractions, so that the acquisition of large tracts of public land in Texas is a thing of the past. * * * Had Texas lands continued to be disposed of in large tracts they would now be all under fence, and the home-seeker would be compelled to look elsewhere, until such time as the cattle companies found it to their interest to divide and sell their lands.

The wisdom of the land policy of the United States has been abundantly vindicated in the material prosperity and in the intellectual and social development of our Western and Northwestern States. It has also tended to the advancement of the commercial, industrial, and transportation interests of the whole country. It would perhaps have been better if the more restrictive policy of later days in regard to the disposition of public lands had been earlier adopted.

It is, however, a notorious fact that the public land laws now in force, although framed with the special objects of encouraging the settlement of the public domain, of developing its resources, and protecting actual settlers, *have been extensively* evaded and violated. Individuals and

corporations have by purchasing the proved-up claims, or purchases of ostensible settlers, employed by them to make entry, extensively secured the ownership of large bodies of land.

The Commissioner of the General Land Office has several times invited the attention of Congress to such abuses, and to the laxity of the present laws relating to the entry of public lands. The violations referred to are also attributed by him to the insufficiency of the force employed by the Land Office for the purpose of detecting frauds of the character mentioned.

These facts commanded the attention of the Forty-eighth Congress. A bill passed the House of Representatives providing for the repeal of all laws for the pre-emption of the public lands, as well as the laws allowing entries for timber culture and the laws authorizing the sale of desert lands in certain States and Territories. This bill also passed the Senate with an amendment, but too late for final action in the House of Representatives.

It has been asserted, in opposition to the provisions of that bill, that it was conceived in the interest of corporations, and of persons and syndicates desirous of having the public lands sold at auction, whereby they might be enabled to secure the ownership of large quantities of pine lands and other lands which could profitably be used in the prosecution of large enterprises, and particularly the range and ranch cattle business. The subject will undoubtedly receive the attention at the hands of Congress which its importance demands.

As before stated, most of the great range-cattle area of the Northwest is not susceptible of cultivation. Here and there along rivers and small streams of water which flow from the mountain ranges and spurs of those ranges are found meadow lands. Besides, in many localities the soil is of a character which affords the facilities of irrigation and in many instances with astonishing agricultural results. But the proportion of lands so available is small indeed. It is estimated that fully 95 per cent of the lands of Western Dakota, Western Nebraska, Montana, Wyoming, Utah, Arizona, New Mexico, and Colorado, other than the mountain regions, is, on account of the small amount of precipitation of moisture, capable of producing only bunch grass, gramma, buffalo grass, and other nutritious grasses, and sage brush as before mentioned, and therefore is fit only for the pasturage of animals. The limited rain-fall, and the fact that it occurs mainly during the spring and summer months, appear, however, to be essential conditions to the production of these grasses. Hundreds of thousands and even millions of contiguous acres of this vast area are now apparently worthless for ordinary agricultural purposes. No settler would accept such land as a gift, upon the condition that he should depend for a living upon the results of its culture. Its value for pasturage is, besides, dependent upon the condition of reasonable proximity to water. It is found in practice that range cattle can graze to advantage only on lands situated

within 6 to 7 miles of water. The result is that throughout the range-cattle area grazing is limited mainly to strips of land from 12 to 14 miles in width along streams of water, while beyond such limits there are, in certain sections, large bodies of land abundantly supplied with nutritious grasses which are available for pasturage only in driving herds from the valley of one stream to that of another.

As already stated, it has been proposed to reclaim large tracts of such lands to the use of the herdsmen by means of artesian wells. The results thus far secured in this way afford grounds to believe that the present capacity of the range-lands in the northern territories can be largely increased.

In certain sections the ownership of lands on both sides of streams has been secured for long distances by persons engaged in the cattle business. By this means they have acquired the use of extensive areas of range or public lands, the same being too far removed from other "water rights" for the grazing of cattle belonging to other persons. During the last eight or ten years a struggle has been going on in certain parts of the range-cattle area between settlers and the owners of great herds for the possession of lands along the streams. In so far as possible the herdsmen, in certain localities, have secured water rights under the homestead and pre-emption laws of the United States, and also by the purchase of the proved-up claims of settlers. It is believed, however, that to a considerable extent such acquisitions have been made in violation both of the letter and of the spirit of our land-laws applicable to the public domain.

But in certain other sections of the range and ranch-cattle area there are very many large herds, the owners of which have secured the title to little if any land through which there are running streams at which cattle can obtain water. Of late years there seems to have been a large increase in the number of herds of this description. So long as the streams are not fenced against them they have had free access to water with the cattle of herdsmen who have secured water rights of their own. Herdsmen of this latter class are, in certain quarters, regarded by the former as intruders upon ranges which for several years they have considered their own for the purpose of grazing cattle, but as such lands belong to the Government they have no recourse against the invaders, who generally come in sufficient force to maintain their rights, not only upon the ranges but also to the privileges and benefits of cattle associations, which are organized with the special view to co-operative work at the semi-annual "round-ups."

This invasion of ranges already stocked and provided through actual ownership of land along streams with the facilities of water, in connection with the gradual encroachments of actual settlers, appears to have led to the practice of fencing in large bodies of range lands, thus converting the so-called "range" cattle business into a ranch-cattle business upon the public lands. The reports of special agents of the General Land Office *show that 4,431,980* acres of the public lands have been

fenced in for that purpose, and without any shadow of right. During the second session of the Forty-eighth Congress an act was passed forbidding such unlawful occupancy of the public lands, and authorizing the President of the United States to take such measures as may be necessary in order to remove or destroy any such inclosure and to employ civil or military force for that purpose. (Act of February, 1885.)

According to the best and most reliable information which the chief of this Bureau has been able to obtain in regard to the practical results of the present condition of affairs, under which the settler locates where he pleases and enjoys equal rights "on the range" with the great cattle owner, it appears that in certain sections the settlers, by securing locations commanding the water supply, have driven the large herdsmen off. This is said to be quite extensively the case in Montana. In other sections the herdsmen have by securing the ownerships of water privileges under the pre-emption and homestead, and other land laws of the United States, and by the purchase of the proved-up claims of settlers, acquired almost the exclusive right to water supplies, and thus shut out settlers from extensive areas.

FOREIGN OWNERSHIPS OF LAND, WITHIN THE RANGE AND RANCH CATTLE AREA.

To a very considerable extent foreigners of large means, and who indicate no intention whatever of becoming citizens of the United States, have purchased lands within the great range and ranch cattle area, and embarked in the cattle business. Titles to such lands have been secured, not only by individuals, but also by foreign corporations. Certain of these foreigners are titled noblemen of countries in Europe. Some of them have brought over from Europe in considerable numbers, herdsmen and other employés who sustain to them the dependent relationships which characterize the condition of the peasantry on the large landed estates of Europe. The public sentiment of this country appears to be opposed to allowing foreigners to acquire title to large tracts of land in this country. During the second session of the Forty-eighth Congress Hon. William C. Oates, of Alabama, presented a report upon the subject to the House of Representatives, from the Committee on Public Lands, accompanied by the following bill:

A BILL to prohibit aliens and foreigners from acquiring title to or owning lands within the United States of America.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no alien, or foreigner, or persons other than citizens of the United States, and such as have legally declared their intention to become citizens thereof, shall acquire title to or own any lands anywhere within the United States of America and their jurisdiction; and any deeds or other conveyances acquired by such after the approval of this act shall be void.

The following lists, showing such ownerships, were presented during a discussion on the subject by members of that body:

Number of acres of land purchased by foreigners in the United States within a recent period.

[From a speech of Mr. N. W. Nutting, of New York, in House of Representatives, March 27, 1884.]

Purchaser.	Amount.	Purchaser.	Amount.
	Acres.		*Acres.*
English syndicate No. 1 (in Texas)	4,500,000	Lord Dunraven	60,000
English syndicate No. 3 (in Texas)	3,000,000	English Land Company (in Florida)	50,000
Sir Edward Reid, K. C. B. (in Florida)	2,000,000	England Land Company, represented by B. Newgas	50,000
English syndicate, headed by S. Phillpotts	1,800,000	An English capitalist (in Arkansas)	50,000
C. R. and Land Company of London, Marquis of Tweedale	1,750,000	Albert Peel, M. P., Leicestershire, England	10,000
Phillips, Marshall & Co., of London	1,300,000	Sir John Lester Kaye, Yorkshire, England	5,000
German syndicate	1,100,000	George Grant, of London (in Kansas)	100,000
Anglo-American syndicate, headed by Mr. Rodgers, London	750,000	An English syndicate (represented by Close Bros.) in Wisconsin	110,000
An English company (in Mississippi)	700,000	A Scotch company (in California)	140,000
Duke of Sutherland	425,000	M. Ellerhauser (of Nova Scotia) in West Virginia	600,000
British Land and Mortgage Company	320,000	A Scotch syndicate (in Florida)	500,000
Captain Whalley, M. P. for Peterboro', England	310,000	A. Boyesen, Danish consul, at Milwaukee	50,000
Missouri Land Company, Edinburgh, Scotland	300,000	Missouri Land and S. S. Co., of Edinburgh, Scotland	165,000
Hon. Robert Tennant, of London	230,000	English syndicate (in Florida)	59,000
Scotch Land Company, Dundee, Scotland	247,666		
Lord Dunmore	100,000		
Benjamin Newgas, Liverpool, England	100,000	Total	20,941,666
Lord Houghton	60,000		

Number of acres of land purchased by foreigners in the United States within a recent period.

[From a speech of Hon. Charles B. Lore, of Delaware, in House of Representatives, June 3, 1884.]

Purchaser.	Amount.	Purchaser.	Amount.
	Acres.		*Acres.*
An English syndicate, No. 3, in Texas	3,000,000	Lord Dunmore	120,000
The Holland Land Company, New Mexico	4,500,000	Benjamin Newgas, Liverpool	100,000
Sir Edward Reid and a syndicate in Florida	2,000,000	Lord Houghton, in Florida	60,000
English syndicate, in Mississippi	1,800,000	Lord Dunraven, in Colorada	60,000
Marquis of Tweedale	1,750,000	English Land Company, in Florida	50,000
Phillips, Marshall & Co., London	1,300,000	English Land Company, in Arkansas	50,000
German syndicate	1,100,000	Albert Peel, M. P., Leicestershire, England	10,000
Anglo-American syndicate, Mr. Rogers, president, London	750,000	Sir J. L. Kay, Yorkshire, England	5,000
Byran H. Evans, of London, in Mississippi	700,000	Alexander Grant, of London, in Kansas	35,000
Duke of Sutherland	425,000	English syndicate (represented by Close Bros.) Wisconsin	110,000
British Land Company, in Kansas	320,000	M. Ellerhauser, of Halifax, Nova Scotia, in West Virginia	600,000
William Whalley, M. P., Peterboro', England	310,000	A Scotch syndicate, in Florida	500,000
Missouri Land Company, Edinburgh, Scotland	300,000	A. Boysen, Danish consul, in Milwaukee	50,000
Robert Tennant, of London	230,000	Missouri Land Company, of Edinburgh, Scotland	165,000
Dundee Land Company, Scotland	247,000	Total	20,747,000

THE PROPOSITION THAT THE GOVERNMENT SHALL LEASE LARGE BODIES OF THE PUBLIC LANDS TO CATTLEMEN.

In consequence of the difficulties which have arisen from the overstocking of the ranges by placing herds upon them without at the same time securing for their special use water privileges with adjacent feeding-grounds, and in consequence also, it is believed, of the conflict of interests which, in many localities, have arisen as between the herdsmen and settlers, a majority of the cattlemen appear to have arrived at the conclusion that in order to protect their interests they must, if possible, secure the control of large bodies of range lands by means of long leases from the Government. The attitude of the cattlemen upon this subject appears to be formulated in the following preamble and resolutions, adopted at the National Cattlemen's Convention, held at Saint Louis, November 17 to 22, 1884:

Whereas experience has demonstrated that beef-cattle can be more economically raised in the arid and elevated portions of the country than elsewhere, and that the vast plateau lying between the 98th meridian and the Sierra Nevada mountains, is better adapted for this great industry than any other part of the United States; and

Whereas, under existing laws, the occupants of this region are not able to acquire title to lands in such quantity as to guarantee permanency and security in their business, and to justify such improvements and expenditures as have been profitably made in the more favored States; and

Whereas these lands could be leased for a term of years with profit to the Government, without in any manner conflicting with existing homestead and pre-emption laws, thereby giving greater security to those engaged in this great industry; and

Whereas more than three hundred million dollars have already been invested in ive-stock within the limits specified, although the owners of these herds have been unable to lease or purchase the lands, holding them only by possession and sufferance, their property in constant peril from conflicting claims and unfavorable legislation; and

Whereas the beef raised on these plains has become an important factor in our foreign trade, increasing in greater ratio than any other product, and will, within a few years, if properly protected, become the most important article of food supply sent from our shores; and, under these circumstances, we believe it to be the duty of the Government to aid this great industry in every way consistent with the general welfare; therefore,

Resolved, That it is the sense of this convention that it would be for the best interest of the stock-growers located upon this arid region, and to the entire country, to lease these lands for a term of years, reserving all the rights to actual settlers under the homestead and pre-emption laws: *Provided*, That the States of California, Nevada, Oregon, and the Territories of Utah and Idaho, be excluded from the contemplation and operation of this resolution.

Resolved further, That a committee of seven be appointed by the chair to prepare a memorial to Congress upon this subject.

This formal expression of opinion, embodying a very large and important public question, addressed to the legislative branch of the National Government, commands, it is believed, the assent of a majority of the large herdsmen. There are many of them, however, who are not in favor of the proposed plan, believing it to be opposed to sound views

of public policy, and, besides, likely to work more harm than good to the interests of the cattlemen. The settlers, and all who favor their interests, are unanimously opposed to it.

In support of this measure it is urged:

First. That such leases would justify the great expense of sinking artesian wells throughout the dry area, and that by such means the possibilities of the dry area for pasturage might be more than doubled. It is asserted that under the present order of things the large cattle owners are discouraged from making such improvements, for the reason that after securing a supply of water settlers might, under existing laws, come in around them and cut them off from the water supplies which they had secured perhaps at great cost.

Second. In favor of the leasing of the public lands as before mentioned, it is maintained that at reasonable rates, the rental of such lands would yield to the National Treasury from $10,000,000 to $50,000,000 annually. This argument does not appear to be of any great force, in view of the fact that the Government does not at the present time stand in need of an increase of its revenues. The question as to the advisability of adopting the policy of leasing the extensive range-cattle lands of the interior involves, however, other and exceedingly important considerations, to some of which attention is here invited.

The plan of leasing the public lands would afford to the owner or owners of each herd or to associations of herdsmen, the right to fence extensive areas of the public lands, and would thus debar the homestead settler, the settler engaged in the irrigation of lands under the "desert act," and the settler on lands under the privileges of the timber-culture acts, from allowing his cattle to feed on contiguous ranges which are embraced in the public domain. But this privilege, now enjoyed alike by the settler and the great herdsman, by the owner of a dozen head of cattle and the owner of thousands, is one of the chief inducements which has led the settler to occupy the lands, of which, under the pre-emption, homestead, and other laws before mentioned, he has been able to acquire the ownership.

Such portions of those lands which the settlers now have under fence are generally, it is believed, rendered susceptible to tillage only by means of irrigation. As a general rule the soil is cultivated by settlers only to the extent necessary in order to supply their own needs and the needs of their families. Their only surplus product is cattle. On account of limited capital but few are kept, and those in many cases are required to be sheltered and fed during stormy weather and periods of extreme cold. Apparently the effect of allowing the large herdsmen to secure the absolute control of "range lands" through leasing would be to compel very many settlers to abandon their homes and sell them to the large herdsmen at prices which the latter might be able to dic-

tate. But even if the settler should wish to remain, as thus environed, he would, in various ways, be at the mercy of the great herdsmen.

It appears hardly necessary to go further into this subject in the present connection in order to show that the proposition to lease the public lands in large bodies would be in the face of the line of policy regarding the disposition of the public lands which has prevailed from the beginning, and which has wrought beneficially to the commercial and industrial interests of the United States. Evidently it will be much more in harmony with the sentiments and wishes of the people of this country if the National Government shall adhere to its present line of policy regarding the disposition of the public lands and provide additional safeguards and offer new inducements to settlers rather than place any possible barrier to the occupancy of the public lands by them or to their enjoyment of the privileges which they have already secured under existing laws. In a word, it will be much more promotive of the public interests if the lands now held by the Government shall be dedicated to the rearing of men rather than to the rearing of cattle.

Another highly objectionable feature of the proposition to lease the range lands of the great dry area must here be mentioned. The effect, at the present time, of leasing all the available range cattle lands to persons occupying them would be to prevent other owners of herds from engaging in the business. That would, of course, be to shut out competition in a business which has already yielded enormous profits. It is held by some that in certain sections the ranges are now fully stocked; but that is denied. For the Government to take such action as would tend to check competition, and therefore promote a monopoly of the use of its own free lands, would be in the highest degree objectionable. No class of men, much less tenants by sufferance upon the public lands, have reason to expect such protection of their business interests against the hazards of commercial competition. Besides, it is evident that cattlemen would, under the privileges of leasing, combine in great associations, a measure apparently required by the exigencies of the semi-annual "round-ups," and thus be able the more effectually to eliminate competition. In other words, enormous monopolies would be created, having vast territorial sway.

But the people of this country are intolerant of monopoly powers generally. Wherever such powers do exist, apparently of necessity or from the force of circumstances beyond human control, as, for example, in our system of railroad transportation, there is generally a popular demand that the exercise of such powers shall be subjected to a close public scrutiny and to such regulations as experience has proved to be necessary in order to protect the public interests. But it appears to be highly inexpedient to subject the National Government to the duty of supervising or regulating commercial and industrial affairs wherever it can be avoided. The danger also exists that the proposed system of leasing the public lands might become a source of official corruption.

In various ways it would be troublesome, indeed, perhaps even more so than the so-called "Indian problem."

It seems, also, to go without saying that public sentiment in the United States is opposed to allowing unnaturalized foreigners engaged in the cattle business to obtain by the leasing of public lands a more permanent foothold than they have already been able to secure in this country under our land laws now in force.

CONCLUDING REMARKS IN REGARD TO THE OCCUPANCY OF THE PUBLIC LANDS FOR RANGE-CATTLE PURPOSES.

The range and ranch cattle business of the Northwestern States and Territories is one of the most attractive and important commercial and industrial enterprises of the present day, and, as such, is fully entitled to all the encouragement and protection which may be accorded it consistently with the observance of those rules of policy which are fundamental to American institutions, and which have exerted so important an influence upon the course of the social and industrial development of the country.

The range and ranch cattle business of the North has provided an enormous outlet for young cattle from the great State of Texas, the most prolific breeding ground in this country, and it has also provided quite extensively a market for young cattle from the dairy States of the West, and from the State of Oregon and Washington Territory, to be matured and fattened on the northern ranges. It has also added very largely to the beef supply of this country, and thus has exerted a most important influence in placing that very nutritious and desirable article of food within the reach of the laboring classes. It has, besides, afforded a large amount of profitable traffic to transcontinental railroads, and been the means of greatly encouraging railroad construction throughout the Territories, thereby largely increasing their population and wealth. At the same time it has been highly promotive of both the internal and the foreign commerce of the United States.

The northern range-cattle business has also been perhaps the most efficient instrumentality in solving the Indian problem, by occupying lands throughout that extensive region over which formerly the Indians roamed, and upon which for centuries the buffalo and other wild animals fed. By this means a vast area, which, but a few years ago, was apparently a barren waste, has been converted into a scene of enterprise and of thrift, and now supplies a large and profitable employment both to capital and to labor. Thus the scope of the national industries has been greatly enlarged and the national wealth increased.

Already the range and ranch cattle industry has passed through two or three successive stages of development, and it appears to be now in a transition state. That in the future it will largely increase, no one who has studied the subject with any degree of care can for a moment doubt.

Evidently it is yet too early to attempt to throw around it the constraints of artificial conditions. Its best and most natural development for the good of the country must come as the result of a growth conformed to its relationships to co-ordinate branches of industry throughout the vast area where now, to a great extent, it occupies the attitude of a pilgrim upon the public lands of the United States. The difficulties of which the cattlemen complain are largely a result of this fact. But the methods of pioneer life are never those of organized society, and it is yet too early to attempt to set bounds to future development.

The conflicts of interests as between the herdsmen themselves and as between herdsmen and settlers, to which allusion has hereinbefore been made, appear to be but the natural and unavoidable result of the interaction of productive forces in the development of the resources of the country, but the history of our race clearly indicates that out of such struggles usually come those adjustments of right and of interest which characterize our civilization and result in the advancement of the commercial and industrial interests of a great and free people.

THE RANGE AND RANCH CATTLE BUSINESS OF NEVADA AND ARIZONA.

The foregoing statements relate more particularly to the range and ranch cattle business of the States and Territories situated east of the Rocky Mountains. The following special statements are therefore presented in regard to the business in Nevada and Arizona.

THE RANGE-CATTLE BUSINESS OF NEVADA.

The range-cattle industry has already attained to considerable magnitude in Nevada. It is estimated that the total number of both range and ranch cattle in the State is about 700,000, During the year 1884, the surplus product was 35,000 head, averaging 700 pounds each when dressed. The chief cattle markets of Nevada are Chicago and San Francisco.

The climate and soil of the ranges and valleys of Nevada and the quality of the natural grasses are especially favorable to the rearing of thoroughbred cattle, both of the milch and beef varieties. Large numbers of high-bred bulls and cows have been imported into the State at great expense.

Much attention has already been paid to irrigation and to the sinking of artesian wells. In this way large tracts of land, formerly arid, have been reclaimed and become productive. There are now about 2,000 miles of ditches in the State, irrigating 150,000 acres of land, and the possibilities of reclaiming large areas of land in this way are very extensive.

Attention is invited to the interesting and instructive statement by Hon. G. W. Merrill, in regard to irrigation and grazing in Nevada. Appendix, No. 26.

THE RANGE-CATTLE BUSINESS OF ARIZONA.

The report for the year 1884, of Hon. H. F. A. Tritle, governor of Arizona, embraces exceedingly interesting and instructive statements in regard to the resources of that Territory, and especially in regard to its capabilities for the raising of cattle. (See Apendix, No. 27.)

There are now in the Territory 300,000 head of cattle, and under existing conditions there is room for 1,000,000 more. With a soil of remarkable fertility the great need is water. The rainfall is sufficient to produce a bountiful supply of highly nutritious natural grasses, but not sufficient for agricultural purposes. The running streams which can be depended upon for supplying the needs of stock are few and far between. As hereinbefore stated, cattle can range only about 6 or 7 miles away from water, therefore vast areas of land beyond such limits, well supplied with grasses, are now unavailable for grazing purposes. The ranges of Arizona embrace 60,000 square miles of good grazing lands, equal to 38,400,000 acres; a very large part of which cannot now be used for the reason just stated.

A commission appointed to examine and report upon artesian wells in Cochise County, state that "sufficient water has been obtained in this way to water at least thirty thousand cattle, besides affording sufficient irrigation to maintain the gardens that a population attending to this stock would require, and, perhaps, tree plantations for the relief of stock from sun and wind."

Governor Tritle, in his recent report, says, "Should all the grazing land in the Territory be made available in this way it is estimated that there would be ample pasturage for 5,000,000 cattle."

There is also the possibility of largely increasing the area of irrigated lands by the construction of ditches for that purpose, thus utilizing the flow of waters which have their sources in mountain ranges.

Alfalfa, the most nutritious of all the grasses, grows abundantly. It produces five crops annually of from 1½ to 2 tons per acre. It is an excellent food for cattle, and also for hogs.

The climate of Arizona, especially in the northern portions of the Territory, is mild and healthful. No epidemic disease has ever been known among cattle, and the conditions of climate and of soil are favorable to the raising of animals of the higher breeds.

THE RANGE-CATTLE BUSINESS OF THE DOMINION OF CANADA.

The area producing bunch-grass and other nutritious natural grasses extends far north into the British provinces of Assiniboia and Alberta. The fact that the buffalo roams throughout those provinces, and into the province of Saskatchewan, would seem to indicate that cattle may also be fed there, as on the more southerly ranges. It is, however, doubtful as to whether the range-cattle business can be successfully

carried on to any great extent in those provinces. Upon this subject Mr. Lorenzo Fagersten, of Chicago, an expert employed by this office, says:

The severity of their winters precludes "range" business in the American sense, and the extra care necessary for the maintenance of a herd equal in quality to our range cattle would add so much to the cost as to completely debar them from our market.

The question as to the raising of cattle "on the range" in the British Northwest is however one yet to be more fully determined by the results of practical experiment. Upon this subject Mr. E. V. Smalley, of Saint Paul, an expert employed by this office, says:

How far north this new cattle district and the comparatively new region in the Valleys of the Bow, the Belly, and the Saskatchewan Rivers east of the mountains will extend, can only be determined by experience. When once stocked the products of this district will go in part to Chicago to swell the enormous cattle movement centering in that city, unless the United States duties on imports stand in the way, and in part to Montreal and Quebec for Canadian consumption, or for shipment to England.

Mr. Smalley adds:

Thus far the beef product of the Canadian ranges has been consumed in the construction camps of the Canadian Pacific Railway, and in the city of Winnipeg.

All the cattle which have thus far been brought over the Canadian Pacific Railway have come from the Montana ranges. Certain of the more northerly Montana ranges are situated nearer to the line of the Canadian Pacific Railway than to that of the Northern Pacific Railroad. This circumstance, and the fact that the supply of grasses in the Province of Assiniboia is abundant during the proper season for marketing, has led to such shipments of Montana cattle by the way of the Canadian Pacific Line. But movements of this sort are sporadic.

The Northern Pacific Railroad constitutes the shortest and cheapest route for the shipment of range cattle to market from at least four-fifths of Montana, and from all parts of Northern Dakota and Northern Idaho.

From all that is now known in regard to the capabilities of the British northwestern provinces for the production of cattle, and in regard to the geographical conditions governing the movement of cattle to market from the northern ranges of the United States, there appear to be no substantial grounds for predicting a cattle movement of any considerable magnitude over the line of the Canadian Pacific Railway.

In British Columbia the climate is generally milder than on the east side of the Rocky Mountain Range, but it is believed that the area there suited to the raising of cattle is not very extensive. The country is said to be broken by an almost uninterrupted succession of mountain ranges and spurs from the Cascade Range, near the Pacific Coast, to the Rocky Mountain range at the east.

THE RANGE AND RANCH CATTLE BUSINESS IN MEXICO.

In a letter addressed to this office under date of April 25, 1885, appendix No. 56, Mr. Levi C. Wade, President of the Mexican Central Railway Company, states that since the opening of that line the number of cattle in Mexico has evidently increased.

Between Paso del Norte and the city of Chihuahua there is a large extent of grazing country, not excelled by any in the United States, with an abundance of nutritious grasses and a plentiful supply of water. It contains many fine lakes and ponds, and on it are pastured vast herds of neat cattle and horses.

Notwithstanding the duties upon cattle imported from Mexico into the United States, the rate being 20 per cent. ad valorem, there is some trade in cattle between Mexico and the United States. During the year ending December 31, 1884, there was transported over the Mexican Central Railroad 2,219 horses and 2,855 head of neat cattle, nearly all of which were shipped from different points in Mexico to the United States. This traffic is constantly increasing. The establishment of a stock-yard at El Paso would promote its development. At the present time the purchase of cattle in Mexico is wholly for the purpose of stocking ranges and ranches in the United States.

GENERAL REMARKS IN REGARD TO THE RANGE AND RANCH CATTLE BUSINESS OF THE UNITED STATES.

The occupancy of the public lands throughout the central and northern portions of the great dry area for range cattle purposes is a legitimate and laudable branch of the national industry. It has subdued and utilized such lands for the production of a cheap and nutritious article of food now brought within the means of purchase by the laboring people of this country, and it has contributed greatly to the foreign commerce of the United States by swelling the volume of our exports. It has also served as an indirect but effectual instrumentality in keeping the Indians upon their reservations, by expelling their game—chiefly the buffalo—from the ranges, and thus removing the main inducement for the Indians to go on hunting expeditions outside of their reservations. Besides, it has supplied in the cow-boys an effective police force, which is ever alert to prevent ostensible hunting excursions by Indians, such excursions in times past having oftentimes been but the pretext to cover schemes for going "on the war path."

It is not a strange thing that a great branch of industry like the range cattle business, which within the space of a few years has assumed gigantic proportion, should in the course of its development have been subject to frictional resistances and embarrassments. But difficulties beset all human enterprises, especially those which are new

and have not become fully adjusted to the conditions which constitute their environment.

As hereinbefore stated there are several important features of the range and ranch cattle business which deserve a full and careful investigation by Congress with the view of devising some definite and carefully considered line of policy regarding the disposition of the public land, now so extensively used for the pasturage of cattle "on the range." Such an investigation would, of course, tend to determine the respective rights of cattlemen and of settlers, and it would also embrace incidentally the consideration of the question as to the practicability of increasing the rain fall of the great dry area, and of securing additional supplies of water for cattle and for the purposes of irrigation, by means of artesian wells.

These subjects in their summation constitute one of the largest and most important lines of inquiry which have ever yet commanded the attention of the Government of the United States.

THE GROWTH AND PRESENT MAGNITUDE OF THE CATTLE INTEREST IN THE UITED STATES.

It is impossible to state with any degree of precision the total number of cattle in the United States at the present time. The following table shows the total number for the years 1850, 1860, 1870, 1880, and 1884:

Number of cattle in the United States.

Year.	Milch cows.	Other cattle.	Total.
1850	6,385,094	11,393,813	17,778,907
1860	8,585,735	17,034,284	25,620,019
1870	8,935,332	14,885,276	23,820,608
1880	12,443,120	23,482,391	35,925,511
1884			49,417,782

The data in the above table for the years 1850, 1860, 1870, and 1880, are from the Census. The total number for the year 1884 has been compiled as follows: The total number of cattle in the State of Texas is the result of a careful estimate upon the subject by Mr. George B. Loving, of Fort Worth, and Mr. D. W. Hinkle, of San Antonio, Tex. The assessment rolls of the State for 1884 give as the total number 6,517,524 cattle, valued at $81,052,616, but the gentlemen just named agree in the belief that owing to unavoidable errors in the report of the comptroller of public accounts, the total number may be stated at 9,000,000, and their value at $153,000,000. The number of cattle in certain other States and in Territories west of the Mississippi River is taken from a table prepared by Col. R. D. Hunter, president of the National Cattle and Horse Growers' Association, for the national convention of cattlemen, held at Saint Louis, November 17 to 22, 1884. The number of cattle in

the remaining States and Territories is from the report of the Department of Agriculture for the months of January and February, 1885.

The following table has been compiled from these data:

Total number of cattle and the value thereof in the several States and Territories at the close of the year 1884.

States and Territories.	Number of cattle.	Value of cattle.	States and Territories.	Number of cattle.	Value of cattle.
Maine	350,746	$11,072,378	Ohio	1,801,380	56,149,661
New Hampshire	235,057	7,482,561	Michigan	917,828	28,707,893
Vermont	406,127	10,988,692	Indiana	1,406,929	42,294,540
Massachusetts	270,740	9,173,289	Illinois	2,390,195	74,215,525
Rhode Island	35,125	1,293,524	Wisconsin	1,258,769	34,361,933
Connecticut	229,908	7,940,418	Minnesota	804,393	21,663,589
New York	2,418,303	82,409,227	Iowa	3,664,440	98,451,301
New Jersey	237,804	8,999,468	Missouri	2,572,190	56,492,211
Pennsylvania	1,769,189	57,174,907	Kansas	2,210,000	58,255,536
Delaware	55,004	1,775,058	Nebraska	1,770,181	47,146,932
Maryland	268,085	8,241,044	California	986,600	29,439,385
Virginia	680,259	15,010,541	Oregon	721,861	16,658,440
North Carolina	669,267	9,199,538	Nevada	283,725	5,444,100
South Carolina	358,776	5,002,081	Colorado	918,993	25,341,174
Georgia	955,269	12,594,233	Arizona	233,466	4,486,551
Florida	612,575	5,717,307	Dakota	350,937	9,626,662
Alabama	714,555	8,818,736	Idaho	263,000	6,786,756
Mississippi	688,375	8,933,558	Montana	770,940	22,988,280
Louisiana	406,871	5,973,025	New Mexico	547,113	10,760,073
Texas	9,000,000	153,000,000	Utah	135,087	4,198,727
Arkansas	697,356	10,842,197	Washington	185,625	4,740,573
Tennessee	786,101	14,994,927	Wyoming	1,095,916	19,116,700
West Virginia	454,125	11,539,633	Indian Territory	1,020,000	20,400,000
Kentucky	808,597	23,674,042	Total	49,417,782	1,189,576,926

It is estimated from the best available data that the total number of cattle in the range and ranch cattle area outside of Texas is about 7,500,000. The average value of northern range cattle is, according to the Department of Agriculture, about $25 per head. At this rate the total value of the cattle on the northern range and ranch cattle area may be stated at $187,500,000.

The total number and value of cattle in the United States, in the State of Texas, and in the range and ranch cattle area north of Texas, is therefore as follows:

	Number of cattle.	Value of cattle.
The United States	49,417,782	$1,189,577,000
The State of Texas	9,000,000	153,000,000
The range and ranch cattle area north of Texas	7,500,000	187,500,000

From this it would appear that the total value of the cattle of Texas, and of the range and ranch cattle area north of Texas, is about $340,500,000, which constitutes nearly 28 per cent. of the total value of the *cattle in the United States.*

The foregoing data are the best which can be procured upon the subject, but they are undoubtedly quite crude.

The number of cattle slaughtered and the value of the annual cattle product of the country is involved in so much doubt that it is not deemed advisable to attempt to make any estimate upon the subject. The annual value of the cattle product of Texas, and of the range and ranch cattle area north of Texas, may, however, be approximated. According to the best data which can be procured the total number of beef cattle marketed outside of that State, and mainly at New Orleans, Chicago, Saint Louis, and Kansas City, was about 625,000, realizing on the average about $25 per head, or a total sum of $15,625,000.

The number of northern range cattle marketed at Chicago, Saint Louis, and Kansas City, making proper allowance for duplication, was about 400,000, and their average value about $40 per head.

The number of beef cattle shipped from Texas, and from the northern ranges during the year 1884, and their value at shipping points, was therefore, according to the best available data, as follows:

	Number.	Average value.	Total value.
		Dollars.	*Dollars.*
From Texas	625,000	25 00	15,625,000
From the northern ranges	400,000	40 00	16,000,000
Total	1,025,000	.....	31,625,000

The total value of the exports of cattle and beef products from the United States during the year ended June 30, 1884, was $11,080,001. This shows that the value of the cattle products of Texas and of the northern ranges and ranches was about 75 per cent. of the value of the exports of cattle and their products from the United States to foreign countries. It appears, however, from the best estimate which can be made that the value of the exports of beef from the United States does not constitute more than 6 per cent. of the total value of the beef product of the country. The fluctuations in the home demand for beef and beef products, therefore, exert a much more potential influence over prices than do the changes in the conditions governing the foreign demand. The range and ranch cattle business of the United States also gives rise to several important internal trade movements, the more important of which will here be mentioned:

First. The driving of young cattle north from Texas to stock the northern ranges began about the year 1868, and, as before shown, it has ranged from 100,000 to 450,000 head annually. It is composed almost entirely of yearling and two-year-old steers with a small proportion of cows and bulls. The total value of cattle constituting this movement amounted, during the year 1884, to about $5,100,000.

Second. Young cattle, both male and female, are also shipped in large quantities from the States of Iowa, Illinois, Wisconsin, and other States *to the northern ranges to* be matured and fattened. This constitutes a

large and valuable adjunct to the dairy business in the States last mentioned, a business found to be more profitable in those States than the raising of cattle for beef. The female calves are usually kept for dairy purposes, while the male calves are largely shipped West to stock the northern ranges. (See Appendix No. 55.) The shipments of this character during the year 1884 over the three principal railroads engaged in the business were as follows:

Mode of transportation.	Number of cattle.
By Northern Pacific Railroad	98,000
By Union Pacific Railroad	26,180
By Atchison, Topeka and Santa Fé Railroad	31,000
Total	155,180

Estimating the value of these cattle at $27 a head, their total value was about $4,190,000. (See Appendix No. 54.)

It therefore appears safe to say that the total value of young cattle shipped into the northern-range area from Texas and from the East, during the year 1884, was about as follows:

Whence shipped.	Value.
From Texas	$5,100,000
From other States	4,190,000
Total	9,290,000

It must be said that these statistics are crude as expressions of the total movement of young cattle into the northern ranges. They constitute, however, the best available exact data, and are believed to furnish an approximately correct view of the subject under consideration.

Young cattle were, at an early day in this business, driven from Eastern Oregon and Eastern Washington Territory to stock the ranges of Montana, Idaho, and Wyoming. Latterly, however, the surplus product of Eastern Oregon and Eastern Washington Territory has been chiefly needed for local consumption on the Pacific coast, and for stocking new ranges in Oregon, Washington Territory, and British Columbia.

There is also another important commercial movement connected with the range and ranch cattle business of the United States, viz, the shipment of bulls of the finer breeds into all parts of the northern ranges and also into Texas, for the purpose of improving the breed of the cattle of those sections. Such high bred bulls are shipped largely from Kentucky, from New York, and other States; to a considerable extent, also, they are imported from foreign countries. It is impossible accurately to ascertain the total value of such cattle.

From the best available data it appears probable that the beef product of that portion of the United States which is situated west of the latitude of Chicago, constitutes about one-half the entire beef product of

the United States. The increase in the beef product of this western portion of the country has been very rapid during the last twenty years. This is clearly shown from the growth of the cattle business of Chicago, Saint Louis, and Kansas City, the principal cattle markets of the West, the city of Chicago being by far the most important of the three.

Number of cattle received at and shipped from Chicago, and the number of cattle slaughtered at that city and sold as fresh, salted, or canned beef, and in the various forms of beef products during the years from 1864 to 1884:

Year.	Number.			Year.	Number.		
	Received.	Shipped.	Packed.		Received.	Shipped.	Packed.
1864	338,840	253,439	70,086	1875	920,843	696,534	41,192
1865	330,301	301,637	92,459	1876	1,096,745	797,724	63,783
1866	384,251	268,723	27,172	1877	1,033,151	703,402	*324,898
1867	329,243	216,982	25,996	1878	1,063,068	699,108	*310,456
1868	323,514	217,897	35,348	1879	1,215,732	726,903	*391,500
1869	403,102	294,717	26,950	1880	1,382,477	886,614	*486,537
1870	532,964	391,709	11,963	1881	1,498,550	938,712	*511,711
1871	543,050	401,927	21,254	1882	1,582,530	921,009	*575,924
1872	684,075	510,025	16,080	1883	1,878,944	966,758	*697,033
1873	761,428	574,181	15,755	1884	1,817,697	791,884	*1,182,905
1874	843,966	622,929	21,712				

*Indicating city consumption.

It will be observed that there was a falling off in the number of cattle shipped from Chicago during the year 1884 as compared with the shipments during the year 1883; but that the number packed was largely increased.

The total number of cattle slaughtered in Chicago during the year 1884, including those packed and canned and for city trade and shipment in the form of dressed beef, was 1,188,154, as against 1,028,651 during the year 1883.

The growth of the cattle trade at and through Saint Louis is exhibited in the following table:

Number of cattle received at and shipped from Saint Louis during each year from 1865 to 1884, inclusive.

Year.	Number received.	Number shipped.	Year.	Number received.	Number shipped.
1865	94,307	46,712	1875	335,742	216,701
1866	103,259	24,462	1876	349,043	220,430
1867	74,146	26,799	1877	411,969	251,566
1868	115,352	37,277	1878	406,235	261,723
1869	124,565	59,867	1879	420,654	226,255
1870	201,422	129,748	1880	424,720	228,879
1871	199,527	130,018	1881	503,84.2	293,092
1872	263,404	164,870	1882	443,169	188,486
1873	279,678	180,662	1883	405,090	249,523
1874	360,925	226,678	1884	450,717	315,433

The following table shows the growth of the cattle trade of Kansas City and of the business of slaughtering beef cattle at that point for shipment:

Number of cattle received at and shipped from Kansas City during each year from 1868 *to* 1884.

Year.	Number received.	Number shipped.	Number slaughtered.	Year.	Number received.	Number shipped.	Number slaughtered.
1868	4,200	.....	4,200	1877	215,768	126,570	27,863
1869	4,450	.....	4,200	1878	175,344	181,761	18,756
1870	21,000	.....	21,000	1879	211,415	155,831	29,141
1871	120,000	100,481	45,543	1880	244,709	194,421	30,922
1872	236,802	206,467	20,500	1881	285,863	223,989	46,356
1873	227,669	182,245	26,549	1882	439,671	359,012	65,119
1874	207,069	166,519	42,226	1883	460,598	387,598	74,314
1875	181,114	126,262	26,372	1884	533,526	463,001	66,250
1876	183,378	120,040	26,765				

The following table shows approximately the movement of cattle through the great primary cattle markets of the West:

Number of "Native," "Range," and "Texan" cattle received at Chicago and Saint Louis during the year 1884.

	Received at Chicago.	Received at Saint Louis.	Total.
Native	1,228,389	90,000	1,318,389
Range	231,734	360,717	950,025
Texan	357,574		
Total	1,817,697	450,717	2,268,414

The above statement embraces the great bulk of the cattle received at the great cattle markets of the West. During the year 1884 there were 533,526 cattle received at Kansas City, of which 90,991 were slaughtered at that point for local consumption and for shipment as fresh beef and as packed beef. The total number of cattle shipped from Kansas City was 463,001, but of this number Mr. W. H. Miller, secretary of the Board of Trade, says, "a few extra-fine native cattle are shipped eastward from this city without entering the Saint Louis or Chicago markets, but the general fact is that cattle marketed here are afterwards marketed in one or the other of those cities." (See Appendix No. 50.)

It is said that the short corn crops of the States of Illinois and Iowa during the last two or three years, and the development of the dairy business in those States, have tended to force the beef cattle industry westward to the great range and ranch cattle area.

THE COST OF TRANSPORTING CATTLE TO EASTERN MARKETS BY RAIL.

The cost of transporting cattle from the northern-ranges to Chicago is shown in the following tables of current rates over the Union Pacific Railroad and over the Northern Pacific Railroad.

The rates per car and per head of cattle are given upon the assumption of an average of twenty head of cattle to each car.

Cattle rates from points on the Union Pacific Railroad to Chicago.

From—	Rate per car-load.	Rate per head.
Green River, Wyo	$176 00	$8 80
Bitter Creek, Wyo	166 00	8 30
Rock Creek, Wyo	133 00	6 65
Laramie, Wyo	128 00	6 40
Cheyenne, Wyo	119 00	5 95
Pine Bluffs, Nebr	112 00	5 60
Ogallala, Nebr	95 00	4 75
Plum Creek, Nebr	95 00	4 75

The following table shows the rates per car-load and per head of cattle, loaded and unloaded, by their owners or agents, when shipped from points in Dakota and Montana to Minneapolis and Saint Paul and to Chicago over the lines of the Northern Pacific Railroad:

Cattle rates from points on the Northern Pacific Railroad to Saint Paul or Minneapolis and Chicago.

From—	Saint Paul or Minneapolis.		Chicago.	
	Rate per car-load.	Rate per head.	Rate per car-load.	Rate per head.
Mandan	$60 00	$3 00	$95 00	$4 75
Dickinson, Dak	65 00	3 25	100 00	5 00
Mingersville, Mont	77 00	3 85	112 00	5 60
Glendive, Mont	89 00	4 45	124 00	6 20
Fallon, Mont	91 00	4 55	126 00	6 30
Miles City, Mont	98 00	4 90	133 00	6 65
Rosebud, Mont	106 00	5 30	141 00	7 05
Custer	117 00	5 85	152 00	7 60
Billings, Mont	122 00	6 10	157 00	7 85
Merrill, Mont	129 00	6 45	164 00	8 20
Springdale, Mont	136 00	6 80	171 00	8 55
Livingston, Mont	144 00	7 20	179 00	8 95
Bozeman, Mont	155 00	7 75	190 00	9 50
Helena, Mont	160 00	8 00	195 00	9 75

From the foregoing schedule of rates it appears that the freight charges for transporting cattle to Chicago from the meridian passing

through the center of the range and ranch-cattle belt is about $6.50. The current rate per head, from Chicago to New York, is about $4.80. The total freight charge for transporting a steer from the cattle belt to New York, may, therefore, be stated at $11.30.

Range cattle are, however, generally slaughtered at Chicago, very few of them being shipped east of that point. The cattle shipped by rail from Chicago to the Atlantic seaboard, and thence by sea to Europe, consist almost entirely of "native cattle" raised in the States of Illinois, Iowa, Missouri, Wisconsin, Minnesota, Nebraska, and Kansas.

The rate of $4.80 per head for cattle from Chicago to New York is equivalent to 53 cents per 100 miles; the rate of $6.40 per head from Laramie on the Union Pacific Railroad to Chicago is at the rate of 60 cents per 100 miles, and the rate of $6.65 per head from Miles City, on the Northern Pacific Railroad to Chicago, is at the rate of 56 cents per 100 miles. In view of the fact that the cattle traffic from Chicago to New York is a regular or "through traffic" of large magnitude and highly competitive, and that the cattle traffic of the Union Pacific Railway, and also of the Northern Pacific Railroad, is a "local" and non-competitive traffic, the rates charged for the transportation of cattle from the northern ranges to Chicago appear to be not only reasonable, but under the circumstances quite low. The managers of the Union Pacific and the Northern Pacific Railroads appear from the beginning to have regarded the cattle traffic as one of great possibilities, and have pursued toward it the liberal and far-sighted policy of imposing such rates as would tend to develop it, instead of imposing upon it the highest rates which it could possibly bear.

THE SHIPMENT OF CATTLE AND DRESSED BEEF.

An important economic change has been inaugurated in the beef-cattle trade of the country, mainly during the last ten years, by slaughtering the animals at the West and transporting the dressed beef to markets at the East and to foreign countries, instead of transporting the cattle themselves. A long controversy has ensued between parties representing cattle interests and the slaughtering or dressed beef interests, in which railroad managers also have taken an active part as to the relative rates which shall be imposed upon these two kinds of freight, which in so far as relates to the traffic interests of the railroads differ widely in their characteristics and incidents. The merits of this controversy cannot be considered here. The question at issue is, however, very fully considered and discussed, in its economic and commercial aspects, in an elaborate report by Mr. Albert Fink, commissioner, to the Trunk Line executive committee, and published in their proceedings of May 31 and June 1, 1883, also in Circulars 614 and 654 of the joint executive committee for the year 1884.

The current rates for transporting cattle and dressed beef from Chicago to the sea-board are respectively as follows:

To—	Rates per 100 pounds.	
	Cattle, net rate.	Dressed beef, minimum weight in car 20,000 pounds.
New York	$0 40	$0 70
Boston	40	70
Philadelphia	38	66½
Baltimore	37	64½

This shows that the dressed beef rate from Chicago to New York is 75 per cent. higher than the cattle rate. Under these relative rates the dressed-beef traffic has, as hereinafter shown, greatly increased.

The rates charged for the transportation of cattle and dressed beef from Chicago to the sea-board, in comparison with the rates charged for other classes of freight, are indicated as follows:

Current rail rates on the various classes of freight from Chicago to New York.

Class.	Per 100 pounds.	Class.	Per 100 pounds.
First class	$1 00	Ninth class	$0 30
Second class	85	Tenth class	25
Third class	70	Eleventh class	30
Fourth class	60	Twelfth class	25
Fifth class	50	Thirteenth class	20
Sixth class	45	Cattle (special)	40
Seventh class	40	Dressed beef in car-loads of 20,000 pounds minimum weight	70
Eighth class	35		

THE TRANSPORTATION OF CATTLE AND DRESSED BEEF FROM THE WEST TO THE ATLANTIC SEA-BOARD.

An elaborate and very clear statement of facts in regard to the eastward movement of cattle and of dressed beef from the Western and Northwestern States to the Atlantic sea-board is embraced in a letter and accompanying tables prepared by Mr. Albert Fink, commissioner of the East and West Trunk Line Association, in compliance with a request from this Bureau. (See Appendix No. 17.) This movement includes beef and cattle both for consumption in the Atlantic sea-board States and for exportation to foreign countries. The chief cattle and beef markets and shipping points in the West are Chicago, Saint Louis, Indianapolis, and Cincinnati. One of the tables furnished by Mr. Fink shows the shipments from these cities to New York, Philadelphia, and Baltimore, and to the New England States, including the city of Bos-

ton. The following statement embraces the data of this sort for the year 1884:

Statement showing the aggregate weight of cattle shipped East from Chicago, Saint Louis, Indianapolis, and Cincinnati to New York, Philadelphia, Baltimore, and the New England States and to other points between the Mississippi River and the Atlantic sea-board during the year 1884:

To-	Shipped East from—				
	Chicago.	Saint Louis.	Indianapolis.	Cincinnati.	Total.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
New York	191,736	57,227	7,406	26,408	282,777
Philadelphia	15,759	7,398	.....	132	23,289
Baltimore	6,211	255	20	257	6,743
New England States	55,996	7,532	20	191	63,739
Interior points	145,420	82,228	14,521	3,108	245,277
Total	415,122	154,640	21,967	30,096	621,825

From this table it appears that 66.7 per cent. of the entire shipments was from Chicago, and that 30.8 per cent. of such shipments was to New York. It may also be remarked here that a very large proportion of the shipments to "interior points" is to slaughtering establishments whence the dressed beef is shipped east; but to a much greater extent cattle are shipped to points in the States situated between the Mississippi River and the Atlantic sea-board, chiefly in the States of New York and Pennsylvania, to be there matured and fattened, and subsequently shipped chiefly to the great markets of the Atlantic sea-board for local consumption or for exportation to foreign countries.

DRESSED BEEF.

During the last five years the shipment of dressed beef from the West to the Atlantic sea-board, both for domestic consumption and for exportation to foreign countries, has rapidly increased. The following table shows the growth of this movement from 1880 to 1884, inclusive:

Year.	To New York.	To Philadelphia.	To Baltimore.	To New England, including Boston.	Total.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
1880	.....	.....	.....	15,680	15,680
1881	.....	.....	.....	75,259	75,259
1882	2,633	448	879	89,150	93,110
1883	16,365	8,601	4,158	116,747	145,871
1884	34,955	12,815	4,282	121,015	173,067

The above table exhibits the fact that the business of shipping dressed beef from the West to the East is comparatively a new busi-

ness; that during the last five years it has grown rapidly, and that it has attained its largest development in shipments to the New England States. Up to the close of the year 1884 the business of shipping dressed beef East was almost entirely a Chicago enterprise. This is shown as follows with respect to the shipments to New York, Philadelphia, Baltimore, and the New England States during the year 1884:

Dressed beef shipped East.

	Tons.
From Chicago	172, 824
From Saint Louis	203
From Buffalo	21
From Illinois	10
Total	173, 058

Preparations have been made at Saint Louis for engaging quite largely in the business of shipping dressed beef from that city to the Atlantic sea-board, and it is expected that this movement during the year 1885 will be of considerable magnitude. The relative growth of the shipment of cattle and dressed beef from the West to the East is clearly exhibited in the following table, which shows the number of tons of each shipped from Chicago, Saint Louis, Indianapolis, and Cincinnati to New York, Philadelphia, Baltimore, and the New England States, including Boston, during each year from 1880 to 1884:

Years.	Shipments of—	
	Cattle.	Dressed beef.
	Tons.	*Tons.*
1880	385, 386	15, 680
1881	511, 825	75, 259
1882	409, 089	92, 978
1883	441, 470	118, 258
1884	337, 187	173, 028

From this data it appears that the shipment of dressed beef from the West to the East has during the last five years increased much more rapidly than that of cattle.

The two conditions essential to the successful transportation of fresh beef from one part of the country to another, and to foreign countries, are a proper degree of refrigeration and proper ventilation. The art of accomplishing these two objects has been carried to a high degree of success. During the last five years fresh beef has been shipped in large quantities from Chicago to Boston, New York, Philadelphia, and Baltimore, and to other Atlantic sea-board cities, and also to Europe. During the year 1884 there were about 19,000 tons of beef shipped direct *from* Chicago to Europe. It is stated by persons of large practical ex-

perience that if fresh beef is kept at the temperature of about 38 degrees Fahrenheit, in a properly ventilated space, it will not deteriorate in quality if so kept for sixty days.

The high degree of success attained in the transportation of fresh beef by sea, as well as by land, is clearly illustrated by the following table, which shows the quantities and values of the imports of fresh beef into Great Britain from each country during the year 1883:

Imports of fresh beef into Great Britain during the year 1883.

Countries from which imported.	Weight.	Value.	
	Pounds.	£.	*Dollars.*
Russia	2,462,432	54,434	264,903
Denmark	61,040	1,475	7,178
Germany	1,615,152	42,902	208,783
Holland	20,608	550	2,677
Channel Islands	51,968	1,854	9,022
France	29,456	977	4,754
Portugal	31,024	736	3,582
Australasia	170,464	4,231	20,590
British North America	3,802,512	94,221	458,526
United States of America	81,868,192	2,059,007	10,020,158
Other countries	24,080	554	2,696
Total	90,136,928	2,260,941	11,002,869

The fact that fresh beef has been successfully transported from Australia to London across the torrid zone, a distance of 13,275 statute miles, via the Suez Canal, and requiring in the passage by steamer forty days, serves strikingly to illustrate the high degree of success which has been attained in the transportation of fresh beef. Such transportation also affords one of the most striking illustrations of the wonderful achievements of modern commerce.

THE SHIPMENT OF FRESH BEEF FROM THE NORTHERN RANGES.

Already the enterprise has been inaugurated of slaughtering range cattle in the Territories at or near railroad stations, and transporting their carcasses East by rail. It is stated by Mr. E. V. Smalley, Appendix, No. 1, that the Marquis de Mores, a French nobleman, has, with the aid of New York capital, established slaughter-houses at several points in Montana. This gentleman has also provided, for the conduct of his enterprise ,refrigerator cars, in which the dressed beef is carried to Duluth, Saint Paul, Chicago, and New York. Cold storage houses have also been established at various points where the meat is kept until marketed.

Mr. Smalley states that "this enterprise, and a few kindred ones of lesser magnitude, have got beyond the experimental stage, and are evidently destined to farther development."

During the year 1884 about 8,000 cattle were slaughtered in Montana, and the dressed beef transported to Eastern markets by rail.

Meat packing has been inaugurated in Texas at Victoria, Dallas, San

Antonia, and Fort Worth, but from the best information which this office has been able to obtain it appears that the business has not as yet been very successfully prosecuted at those points.

In view of the fact already stated, that fresh beef has been successfully transported across the torrid zone from Australasia to London, a distance of 13,275 miles, the passage requiring forty days, there appears to be no good reason to doubt the success of the business of transporting dressed beef from Montana to Europe, as the route lies entirely within the north temperate zone. The distance from Miles City, Mont., to London is only 5,385 miles, and the average time required for such transportation is not over twenty-two days. Practical experience has proved that fresh beef may, under proper conditions as to refrigeration and ventilation, be kept for two months without deterioration.

The success of the transportation of fresh beef from the northern ranges to Eastern markets of course depends largely upon the establishment of somewhat extensive plants for carrying on the business. It is probable also that the lack of the extensive and varied industries for utilizing, in the most profitable manner, the hoofs, hides, horns, blood, and offal renders that aspect of the enterprise less promising in the Territories than slaughtering the cattle at Chicago, where such varied industries exist. Nevertheless the slaughtering of beef cattle at or near the points of railroad shipment appears to be in the line of progress and there is good reason to believe that it will, in the not far distant future, be extensively adopted.

THE EXPORTATION OF CATTLE AND BEEF PRODUCTS TO FOREIGN COUNTRIES.

The exportation of beef salted, or otherwise preserved, has constituted an important branch of the foreign commerce of the United States almost from the time of the organization of the Government. The exportation of canned beef, fresh beef, and of cattle are, however, commercial enterprises of comparatively recent date.

Attention is invited to an interesting communication in regard to the early history of the exportation of cattle and of fresh beef from the United States to Europe by Mr. T. C. Eastman, of New York. (See Appendix No. 39; also to the statement by William Colwell, esq., of Boston, Mass., Appendix No. 53, and statement by Nelson Morris, esq., of Chicago, Appendix No. 54.)

These gentlemen were pioneers in this business, and ever since have been large shippers.

THE EXPORTATION OF PRESERVED MEATS.

The exportation of canned beef is chiefly a Chicago enterprise. It began about the year 1875. Its growth has been mainly a result of the opening up of the facilities of direct railroad transportation from Texas to Kansas City, Saint Louis, and Chicago, the cattle slaughtered for *the purpose of canning* being chiefly Texas cattle. The exports of pre-

served meats were first noted in the annual report of this office on foreign commerce in the year 1864.

The growth of the trade since that time is shown as follows:

Value of the exports, from the United States, of preserved meats during the years 1864 to 1884, inclusive.

Year ended June 30—	Value.	Year ended June 30—	Value.	Year ended June 30—	Value.
1864	$936,884	1871	208,362	1878	$5,102,625
1865	142,683	1872	697,067	1879	7,311,408
1866	58,220	1873	575,407	1880	7,877,200
1867	146,992	1874	848,246	1881	5,971,557
1868	75,226	1875	735,112	1882	4,208,608
1869	181,140	1876	998,052	1883	4,578,992
1870	313,757	1877	3,939,977	1884	*3,173,767

* Canned beef only.

The exports of canned beef were first shown separately for the year 1884. Prior to that time such exports were included under the head of "Meats preserved," but have consisted principally of canned beef.

THE EXPORTATION OF CATTLE.

The following table exhibits the number and value of cattle exported from the United States to the several foreign countries during the year ended June 30, 1884:

Countries.	Number.	Value.	Countries.	Number.	Value.
Great Britain and Ireland	169,257	$17,336,606	Japan	3	$375
Cuba	8,015	145,024	British Guiana	2	150
Mexico	8,093	128,630	Central American States	1	150
British West Indies	1,135	98,968	Dutch Guiana	1	75
British North American Possessions	3,475	96,820	Chili	2	72
Germany	323	30,200	Hayti	1	65
Hawaiian Islands	141	12,785	United States of Colombia	1	40
Brazil	8	1,625	All other islands and ports	2	160
British Honduras	28	1,400			
French West Indies	12	1,320	Total	190,518	17,855,495
French possessions, all other	18	1,030			

From this it will be seen that the total value of exports of cattle from the United States to foreign countries during the year ended June 30, 1884, amounted to $17,855,495, of which the value of the exports to Europe was $17,366,806, or 97 per cent. The exports to Europe were as follows:

Whither exported.	Value.
To Great Britain	$17,336,606
To Germany	30,200
Total	17,366,806

From this it appears that the exports of cattle to Europe were almost exclusively to Great Britain.

Cattle have been exported from the United States to contiguous foreign countries, and to the West Indies for many years, but it was not until the year 1874 that the exportation of beef cattle to Europe was inaugurated.

The number and value of cattle exported from the United States to Great Britain during each year from 1874 to 1884, is shown as follows:

Number and value of cattle exported to Great Britain during each year from 1874 *to* 1884.

Year ended June 30—	Number.	Values.	Year ended June 30—	Number.	Values.
1874	123	$113,800	1880	125,742	$11,847,642
1875	110	73,000	1881	134,361	12,995,283
1876	244	31,220	1882	68,008	6,960,600
1877	5,091	546,829	1883	76,091	7,602,244
1878	24,982	2,408,843	1884	169,257	17,336,606
1879	71,794	6,616,114			

It is estimated that of the total number of cattle exported from the United States to Europe during the year 1884 about 95 per cent. were from west of the meridian of Chicago.

THE EXPORTATION OF FRESH BEEF.

The exportation of fresh beef from the United States to foreign countries is confined almost exclusively to shipments to Great Britain.

The value of such exports to all foreign countries during the year ended June 30, 1884, was as follows:

To—	Pounds.	Value.
Great Britain	115,601,057	$11,516,369
Dominion of Canada	5,025,253	454,652
British West Indies	150,611	15,423
British Columbia	3,908	351
Cuba	3,194	529
Total	120,784,064	11,987,331

The exportation of fresh beef to Europe began in the year 1875; but it was not until the year ended June 30, 1877, that such exports were separately reported to this Bureau.

The following table gives the exports of fresh beef from the United States to Europe—almost exclusively to Great Britain—during each year from 1877 to 1884:

Exports of fresh beef to Europe.

Year ended June 30—	Quantity.	Value.	Year ended June 30—	Quantity.	Value.
	Pounds.			*Pounds.*	
1877	49,210,990	$4,552,523	1881	103,397,477	$9,657,068
1878	54,034,159	5,008,689	1882	65,372,941	6,329,449
1879	53,832,910	4,873,506	1883	79,070,842	8,160,769
1880	84,454,881	7,425,255	1884	115,601,057	11,516,369

Of the total exports of fresh beef during the last two years about two-thirds were of cattle slaughtered at New York and one-third of cattle slaughtered at Chicago. About 95 per cent. of the entire exports of fresh beef were of western cattle slaughtered at Chicago or transported East by rail and slaughtered at the seaboard.

The following table exhibits the value of the exports of cattle and of beef products of all kinds to each foreign country during the year ended June 30, 1884:

Value of the domestic exports of cattle and beef products from the United States during the year ended June 30, 1884, stated by countries and in the order of magnitude.

Order of magnitude.	Countries to which exported.	Cattle.	Beef products.	Cattle and beef products.
1	Great Britain and Ireland	$17,336,606	$19,118,960	$36,455,556
2	British North American possessions	96,820	1,183,935	1,280,755
3	France	.....	734,001	734,001
4	Germany	30,200	497,694	527,894
5	Netherlands	.....	354,652	354,652
6	Belgium	.....	318,214	318,214
7	British West Indies	98,968	206,122	305,090
8	Mexico	128,630	41,017	169,647
9	Cuba	145,024	14,225	159,249
10	British Guiana	150	81,290	81,440
11	French West Indies	1,320	65,865	67,185
12	Denmark	.....	63,229	63,229
13	Italy	.....	63,137	63,137
14	United States of Colombia	40	61,585	61,625
15	Central American States	150	59,488	59,638
16	Sweden and Norway	.....	40,428	40,420
17	Hawaiian Islands	12,785	25,041	37,826
18	San Domingo	.....	33,250	33,250
19	Hayti	65	28,727	28,792
20	British possessions in Africa and adjacent islands	.....	28,083	28,083
21	Brazil	1,625	23,430	25,055
22	Dutch West Indies	.....	23,910	23,910
23	Dutch Guiana	75	22,749	22,824
24	Hong-Kong	.....	19,991	19,991
25	Venezuela	.....	14,954	14,954
26	Portugal	.....	12,734	12,734
27	Peru	.....	10,881	10,881
28	Chili	72	10,529	10,601
29	British Honduras	1,400	6,397	7,797
30	French possessions, all other	1,030	5,661	6,691
31	Danish West Indies	.....	6,553	6,553
32	Japan	375	5,838	6,213
33	Russia on the Baltic and White Seas	.....	5,337	5,337
34	Azores, Madeira, and Cape Verde Islands	.....	5,011	5,011
35	French Guiana	.....	4,753	4,753
36	Porto Rico	.....	4,366	4,366
37	Russia, Asiatic	.....	4,134	4,134
38	Liberia	.....	3,701	3,701
39	China	.....	2,891	2,891
	All other countries	160	11,751	11,911
	Total	17,855,495	23,224,506	41,080,001

The value of the exports of cattle to England, Scotland, and Ireland, respectively, was:

Whither exported.	Value.
To England	$15,476,661
To Scotland	1,859,945
To Ireland	None.

The value of the exports of beef products to England, Scotland, and Ireland, respectively, was:

Whither exported.	Value.
To England	$15,057,142
To Scotland	4,060,203
To Ireland	1,615

The following tables show the number of cattle exported and the weight of fresh beef exported from Portland, Me., Boston, New York, Philadelphia, and Baltimore for periods of years:

Statement showing the number of cattle of domestic product exported from Portland, Boston, New York, Philadelphia, and Baltimore during each year ended June 30, from 1865 to 1884, inclusive.

Years ended June 30—	Portland.	Boston.	New York.	Philadelphia.	Baltimore.
	Number.	*Number.*	*Number.*	*Number.*	*Number.*
1865	4	.....	.....	.....	.....
1866*	.....	.....	.....	.....	.....
1867	.....	1	1,144	1	18
1868	.....	1	1,071	1	.....
1869†	.....	.....	.....	.....	.....
1870	.....	.....	1,201	4	11
1871	.....	4	1,070	.....	2
1872	.....	1	1,037	1	36
1873	.....	6	990	1	40
1874	.....	1	1,267	10	66
1875	.....	3	1,564	2	74
1876	.....	144	1,589	5	18
1877	.....	1 566	4,863	700	12
1878	130	13,887	13,387	1,007	504
1879	2,783	35,593	27,210	7,005	3,361
1880	1,894	52,482	65,151	4,334	8,457
1881	4,613	70,072	56,921	652	7,502
1882	.....	32,568	33,412	.....	3,688
1883	2,027	37,613	29,584	7	8,714
1884	1,332	78,080	73,161	721	17,486

* Not reported by districts.

† Animals not reported in detail.

Statement showing the quantities of fresh beef, of domestic product, exported from Portland, Boston New York, Philadelphia, and Baltimore, during each year ended June 30, from 1877 to 1884, inclusive.

Year ended June 30—	Portland.	Boston.	New York.	Philadelphia.	Baltimore.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
1877	3,330	81,000	39,230,400	9,896,260	.....
1878	.....	727,025	43,926,387	9,392,150	.....
1879	.....	987,158	44,414,227	8,436,945	.....
1880	544,949	13,668,587	60,689,725	9,599,561	.....
1881	4,327,704	31,829,692	63,819,659	3,430,850	.....
1882	1,067,229	17,241,767	47,097,217	.....	.....
1883	1,706,270	17,999,586	59,652,419	.....	.....
1884	383,325	21,622,840	93,557,738	.....	190,000

Appendix No. 36 shows the value of the exports of Indian corn, wheat, and wheat flour, hogs and pork products, and of cattle and beef products during each year from 1875 to 1884. Appendix No. 37 shows the value of the exports of cattle and their products in detail from 1875 to 1884, and appendix No. 38 shows the value of the exports of cattle and beef products of all kinds to each foreign country during the year ended June 30, 1884.

INFORMATION FURNISHED BY EXPERTS AND OTHERS IN AID OF THE PREPARATION OF THIS REPORT.

A large amount of valuable information has been furnished in aid of the preparation of this report by the following-named gentlemen, who have been employed as experts: (1) Mr. E. V. Smalley, editor of The Northwest, Saint Paul, Minn.; (2) Mr. Lorenzo Fagersten, Chicago, Ill.; (3) Mr. Theodore J. McMinn, Saint Louis, Mo.; (4) Mr. George B. Loving, Fort Worth, Tex.; (5) Mr. D. W. Hinkle, San Antonio, Tex.; (6) Hon. G. W. Merrill, of Nevada; (7) Mr. Morris Marcus, secretary of the Chamber of Commerce of San Francisco.

The reports of these gentlemen may be found in the Appendix to this report.

The following-named gentlemen have, also, by courtesy, furnished valuable information, referred to in the body of this report, and printed in full in the Appendix: Prof. Elias Loomis, LL.D., of Yale College, New Haven, Conn.; Mr. Silas Bent, Saint Louis, Mo.; General William B. Hazen, Chief Signal Officer United States Army; Capt. Samuel M. Mills, Acting Chief Signal Officer United States Army; Mr. Franklin B. Hough, Lowville, N. Y.; Mr. Albert Fink, chairman of the joint executive committee of the east and west trunk lines; Hon. James F. Miller, M. C., of Texas; Hon. Samuel R. Peters, M. C., of Kansas; Mr. George Olds, general traffic manager of the Missouri Pacific Railway system; Mr. J. F. Goddard, traffic manager, and Mr. A. A. Robinson, *general freight agent of* the Atchison, Topeka and Sante Fe

Railroad; Mr. W. H. Miller, secretary of the board of trade, Kansas City, Mo.; Mr Thomas C. Eastman, New York; Hon. Noah C. McFarland, Commissioner of the General Land Office; Maj. A. W. Edwards, editor of the Daily Argus, Fargo, Dak.; Hon. John Hailey, Delegate in Congress from the Territory of Idaho; Hon. Joseph K. Toole, Delegate in Congress from the Territory of Montana; Hon. Morton E. Post, late Delegate in Congress from the Territory of Wyoming; Hon. Joseph M. Carey, Delegate in Congress from the Territory of Wyoming; Mr. Thomas L. Kimball, general traffic manager of the Union Pacific Railway; Mr. T. F. Oakes, vice-president of the Northern Pacific Railroad; Mr. James W. Bell, secretary of the Continental Cattle Company, Saint Louis, Mo.; Col. R. D. Hunter, president of the National Cattlemen's and Horse Growers' Association, Saint Louis, Mo.; Mr. George T. Williams, secretary of the Union Stock-Yards, Chicago, Ill.; Mr. W. B. Farr, secretary of the National Stock-Yards, East Saint Louis, Ill.; Mr. J. M. Hannaford, general freight agent of the Northern Pacific Railroad Company; Messrs. Armour & Co., Chicago, Ill.; Messrs. Swift Brothers & Co., Chicago, Ill.; Mr. George H. Morgan, secretary of the Merchants' Exchange, Saint Louis, Mo.; Mr. H. V. Poor, editor of Poor's Railroad Manual, New York; Mr. J. P. Galloway, Bedrock, Colo.; Hon. Thomas M. Bowen, United States Senator from Colorado; Mr. T. M. Baldwin, chief of division, General Land Office; the Commissioner of Indian Affairs; Mr. Charles A. Maxwell, chief of division, Office of Indian Affairs; Hon. E. P. Roggen, secretary of State of Nebraska; Hon. Richard Coke, Senator of the United States from Texas; Mr. N. J. Wilson, Denver, Colo.; Mr. Paul Clendenin, Fort Verde, Ariz.; Mr. Levi C. Wade, president of the Mexican Central Railway Company; Mr. W. W. Nevin, secretary of the Mexican National Construction Company, New York; Mr. Thomas Sturgis, secretary of the Wyoming Stock-Growers' Association, Cheyenne, Wyo., and Mr. A. T. Atwater, secretary of the National Cattlemen's and Horse-Growers' Association, Saint Louis, Mo.

APPENDICES.

APPENDIX No. 1.

STATEMENT PREPARED BY MR. E. V. SMALLEY, OF SAINT PAUL, MINN., IN REGARD TO THE RANGE AND RANCH CATTLE BUSINESS OF THE UNITED STATES.

THE CATTLE INDUSTRY OF THE NORTHWEST.

The business of raising cattle in the Northwestern States and Territories of the United States has developed with remarkable rapidity during the past few years, and has now attained such proportions as to entitle it to rank among important national industries. If it can be said to be based originally upon a theory, that theory was that the native grasses of the plains and valleys which had formerly supported vast herds of buffalos would support vast herds of cattle when the buffalos ceased to graze upon them, and that as the wild animal had managed to exist through the severe winters in the dry herbage, the domestic steer would learn the same method of self-preservation. The cattle industry, beginning in the country convenient to the Union Pacific Railroad in Western Nebraska, Colorado, Wyoming, and Southern Idaho, spread northward into Montana and Western Dakota, until it has reached the northwest territory of Canada. It received a powerful stimulus from the building of the Northern Pacific Railroad, which was completed through Montana in 1882 and 1883, and opened the way to the stocking of new ranges with young cattle shipped in from Iowa, Illinois, and Minnesota, besides furnishing a convenient outlet for sending beef cattle to eastern markets. Previous to the building of this highway Montana cattle were either driven southward to the Union Pacific line, or shipped down the Missouri River by steamboats from Fort Benton and Bismarck. The shipments began in 1874 with about 3,000 head, and increased during the five following years, respectively, to 5,000, 6,000, 10,000, 20,000, and 25,000. The subsequent increase was less rapid until 1884. In 1883 the shipments were 30,418 head, and in 1884 85,300 head, an increase of 180 per cent. This remarkable increase was caused, in part, by the fact that the new herds shipped in by rail or driven in across the plains from the older and better-stocked ranges of Wyoming, Kansas, Nebraska, and Colorado, and in some instances from distant Texas, had become productive. Some allowance must also be made for cattle shipped at points on the Northern Pacific Railroad from ranches in Wyoming, which had previously been shipped by the Union Pacific. The best measure of the increase of stock on the Wyoming and Western Nebraska ranges is furnished by the receipts of cattle at Omaha via the Union Pacific, which increased from 43,220 in 1876, to 121,554 in 1883.

THE GREAT RANGES.

The great cattle ranges of the Northwest occupy the flanks and valleys of the Rocky Mountain system and stretch eastward across rolling plains broken by low ranges of mountains or by "bad land" formations into western Dakota. Roughly speaking, their width may be said to be about 700 miles, their eastern boundary being the prairies of Dakota, where agriculture without irrigation is feasible, and their western boundary the main divide of the Rockies, though in some places they lap over the divide upon the western slope. Still farther west there is another cattle region of considerable extent, lying beyond the Bitter Root Mountains, and occupying portions of the Great Plain of the Columbia and the valleys of the Snake, the Spokane, the Yakimo, and other tributaries of that river. In much of this region, however, the wheat farmers are crowding the cattle off the rolling bunch-grass plains. The beef cattle sold go westward to supply the local markets of Portland, Oregon, and of the towns on Puget Sound and in British Columbia. As yet there has been no eastern

movement from these remote western ranges, but there probably will be in the near future, as the beef product will soon exceed the home demand.

In Montana and Dakota less than one per cent. of the acreage occupied as range territory is valuable for agriculture; in Wyoming scarcely any. The rainfall is insufficient for the growth of crops, and agriculture is only practicable in narrow strips of ground along the borders of the streams where irrigating ditches can economically be taken out. The broad plateaux between the water courses and the slopes of the hills and mountain spurs and ranges must remain for all time what they are to-day, vast natural pasturages, where the native grasses furnish abundant food for cattle and sheep. Cattle-raising in this region owes its notable success, first, to the dryness of the climate, which causes the snow to be blown off the slopes of the hills so as to expose the dried grass; second, to the broken nature of the country, affording shelter in "conlees," and ravines to the animals during severe storms, and lessening the violence of the north wind; and, third, to the admirable qualities of the bunch-grass which covers the ranges. This grass (*Boutelona oligostachya*) affords in its cured state the properties of both hay and grain. It grows in small bunches, which average from six inches to a foot in height, and it shoots from the root in spring before the frost disappears. Its verdant period is very short, for about the first of July it begins to turn yellow, curing itself into firm nutritious hay where it stands. The stalk is solid, unlike that of tame grass, and the head is well filled with small hard seeds, which are retained throughout the winter. Usually the tufts stand from 2 to 4 inches apart. In some districts the intervals are filled with the short, fine, curly buffalo grass; in others the ground is bare between the bunches. From the sparse manner of growth of the bunch-grass a large area of surface is required for the pasture of a comparatively small herd, and it is a common estimate among stock-raisers that thirty acres are needed for each animal. Where a range is pretty well stocked a portion of its area is generally preserved for winter pasturage, the cattle being kept off it during the summer and fall.

THE CANADIAN RANGES.

In the Northwest Territory of the Dominion of Canada, a region lying directly north of Montana, the country is similar in character to that on our own side of the boundary east of the Rocky Mountains, much of the surface being covered with bunch-grass. In spite of the high latitude and the severe cold of the winter season stock-raising is successfully carried on, but thus far the beef product has been consumed in the construction camps of the Canadian Pacific Railroad and in the local markets of the city of Winnepeg. All the cattle brought over the Canadian Pacific to eastern markets have come from the Montana ranges. At no distant day, however, the Canadian Northwest is destined to produce a large beef surplus west of the Rocky Mountains. In the region drained by the Upper Columbia River there are extensive grass tracts unoccupied by herds. The climate is much milder than that of the country east of the Rockies, and will undoubtedly afford a profitable field for stock-raisers when the completion of the Canadian Pacific gives a direct outlet to markets. How far north this new cattle district and the comparatively new region in the valleys of the Bow, the Belly, and the Saskatchewan Rivers east of the mountains will extend can only be determined by experience. When once stocked the products of these districts will go in part to Chicago to swell the enormous cattle movement centering in that city, unless the tariff stands in the way, and in part to Montreal and Quebec for Canadian consumption or for shipment to England.

QUALITY OF RANGE BEEF.

Montana and Wyoming range cattle make excellent beef. The steers grow to an average weight of about 1,100 pounds. Texas cattle, driven as yearlings and two-year-olds to the northern ranges will weigh when four years old about 950 to 1,050—at least an average of 1,000 pounds. A Montana steer is worth, at a shipping point on the Northern Pacific Railroad, from $10 to $15 more than a Texas steer. The Texas stock steadily improves on the bunch-grass feed of the north, and in two generations gains weight and firmness of flesh and assumes the general character of the northern stock. It is now well settled among cattlemen that the climatic conditions adapted for securing the best results in range cattle are a cold, dry winter, free from storms of sleet and wet snow, and a short, warm summer, without excessive or long-continued heat. The plateaux and valleys of the northern portion of the Rocky Mountain system and the elevated plains stretching eastward from the mountains, broken by many spurs and by the fantastic Bad Lands formation, appear to fulfill these conditions admirably. The northern herds are not as prolific, however, as those of more southern ranges, and the driving of Texas young cattle to Wyoming or Montana ranges to mature into beeves is proving to be a profitable enterprise.

LIFE ON THE RANGES.

The large profits realized in the stock business have attracted during the last decade considerable capital from the eastern States and from Great Britain. Adventurous Englishmen, often the younger sons of noble families, find in this industry a congenial pursuit. It is impossible to obtain statistics of the amount of English capital embarked in stock-raising, or the number of Englishmen personally concerned in the ownership or management of cattle ranches; but English participation in joint stock companies and English individual ownership of herds is a notable feature of the business in the entire grazing belt, and especially in Colorado and Wyoming. A recent English writer, Mr. William A. Baillie-Grohman, in a volume entitled "Camps among the Rockies," says on this subject: "The stockman's life out west is one offering certain attractive inducements to the English character, for not only does his vocation bring with it an infinite amount of exercise on the bright breezy plains in a temperate zone in the most delightfully bracing climate in the world, but it is a life where manly sport is an ever-present element. The cowboy and his horse are one. The interest he takes in his equine friends is not of the vicious nature to which our natural attachment to the equine race has been degraded in our own native land; it is healthier in all respects. If the young settler goes far enough west, shooting of the best kind can be combined with the duties of life. Wapiti and Bighorn are often found in either a day's or a two days' ride, and an encounter with the dreaded grizzly roaming freely over the uplands will test his nerves It is a rough life, indeed, coming straight from his English club existence. It will at first perhaps repel him; but the roughness has its good sides, a short experience generally sufficing to weed out the effeminate and unmanly. With the exception of Australia, which I do not know, I opine that in no country will the traveler see in the most out-of-the-way nooks and corners such happy faces, such sterling manliness, as among stockmen in districts where they are often several months without seeing a human being."

It is not uncommon for young English university graduates of high social position to lead for a year or two the rough life of a hired cowboy on a ranch, to learn the cattle business and be competent to manage a large herd to be purchased with the capital of friends at home when they have fitted themselves for the responsible undertaking.

Cattle owners frequently live in the towns and only visit their ranges during the round-up season, leaving the management of their herds to foremen. Many instances are related of men who have grown rich from a small investment in stock made years ago, they meantime pursuing their ordinary avocations in the settlements.

Two antagonistic tendencies are now at work in the cattle country, one in the direction of the growth of powerful corporations, controlling large capital and monopolizing extensive ranges with their herds; the other in that of the steady encroachment on these ranges by small herdsmen who select the best sites on the streams, obtain title to land by pre-emption and homesteading, and perhaps also under the desert act, which gives a mile square of territory for bringing water upon each quarter section, and then pursue the mixed avocation of farming and stock-raising, having no membership in the stock associations which claim the right to the ranges on which they have settled, but looking sharply after their own cattle. Careful observers of these two tendencies believe that unless some provision is made by law for leasing large tracts of public land to stock companies the small herdsmen will gradually push the large herds off from the more desirable ranges. The result would doubtless be a larger total cattle product, for winter losses would be lessened by greater care, and the ranges would be more fully utilized. There must always remain, however, extensive tracts of territory scantily grassed and poorly watered, which will offer no attractions to the settler and upon which only large herds, ranging over hundreds of square miles, can profitably be maintained.

The improvements on a cattle ranch are usually of the rudest character. A log house or "shack," to shelter the men, is erected near a stream, and a rude stable built near by for the ponies and saddles.

If possible, a location is selected near a natural meadow where hay can be cut for the few ponies kept for riding in winter. Most of the horses pick up their feed on the ranges the year round, like the cattle. Sometimes, but not often, an irrigated field of oats or barley will be found near the ranch building. Some of the rich cattle companies have built good structures, but as a general thing the entire expenditure for buildings on a ranch is not more than $400 or $500. The foreman or the owner, with his cowboys, live in a rude fashion without beds or furniture, sleeping in their blankets on the earth floor of their cabins and rarely tasting such luxuries as milk, butter, or fresh vegetables.

DRIVING CATTLE ON TRAILS.

Originally the northwestern ranges were stocked with cattle driven from Texas or Oregon. Texas from an early day has been a great cattle reservoir, and has produced a large *annual surplus from the stock* first brought into the country from Mexico.

The cattle of the Oregon pioneers driven across the plains from Missouri, became the progenitors of great herds, which, on account of the limited local market of the Pacific coast towns, were sold cheaply to drivers to drive eastward to the ranges beyond the Rocky Mountains.

The drive from Texas or Oregon to Northwestern Wyoming or Eastern Montana occupied from four to six months. Now the railroad has almost entirely superseded the overland trail, save for Texas cattle driven through the Indian Territory to shipping points in Kansas, or to fatten on new ranges in the northwest.

Cattle driving, or "riding on trail" as it is called by the stockmen, is an undertaking requiring hardihood, skillful horsemanship, and a knowledge of the character of the wild country to be traversed. There are mountain ranges to climb, vast barren plains to cross, where the soil seems to be a mixture of sand and ashes and no water is found for long distances, and where the only vegetation is sage-brush and greasewood, and rivers to ford, liable to dangerous freshets. To conduct a herd of wild cattle across such a wild country for hundreds of miles without loss from straying and stampeding is no light task.

A trail party driving a herd of four thousand cattle will usually consist of a captain and six or eight cowboys. They will have one or two wagons for blankets and provisions, a cook, and from forty to sixty ponies for riding.

A day's drive will not average more than 15 miles. The animals "drift" rather than travel, feeding as they go. A stampede, scattering the herd over wide expanses of broken country, is what is most dreaded by the cowboys. Such an occurrence is thus described by Mr. Baillie-Grohman:

"Thunder-storms, though by no means frequent, are a source of danger in summer and are very terrifying to wild cattle. On the approach of one of these violent outbursts the whole force is ordered on duty; the spare horses—of which each man has always three, and often as many as eight or ten—are carefully fed and tethered, and the herd is 'rounded up;' that is, collected into as small a space as possible, while the men continue to ride around the densely massed herd. Like horses, cattle derive courage from the close proximity of man. The thunder peals, and the vivid lightning flashes with amazing brilliancy, as with lowered heads the herd eagerly watch the slow steady pace of the cow-ponies, and no doubt derive from it a comforting sense of protection. Sometimes, however, a wild steer will be unable to control his terror and will make a dash through a convenient opening.

"The crisis is at hand, for the example will surely be followed, and in two minutes the whole herd of four thousand head will have broken through the line of horsemen and be away, one surging bellowing mass of terrified beasts. As an American writer on the origin of these ponies very correctly remarks, stampedes may arise from any cause. Sometimes an inexperienced cowboy may startle the herd by an unusual shout. Sometimes the war-whoop of Indians may alarm it. Sometimes a stampede may result from some uncommon sight, which, frightening the leaders, will take off the whole herd. Fancy a pitch dark night, a pouring torrent of rain, the ground not only entirely strange to the men but very broken and full of dangerously steep water-courses and hollows, and you will have a picture of cowboy duty. They must head off the leaders. Once fairly off they will stampede 20, 30, and even 40 miles at a stretch, and many branches will stray from the main herd. Not alone the reckless rider, rushing headlong at breakneck pace over dangerous ground in dense darkness, but also the horses—small, insignificant beasts, but matchless for hardy endurance and willingness—are perfectly aware how much depends upon their speed that night, if it kills them. Unused, till the last moment, remains the heavy cowhide 'quirt' or whip and the powerful spurs with rowels the size of 5-shilling pieces. Urged on by a shout the horses speed alongside the terrified steers until they manage to reach the leaders, when swinging around and fearless of horns, they press back the bellowing brutes till they turn them. All the men pursuing this maneuver, the headlong rush is at last checked, and the leaders, panting and lashing their sides with their tails, are brought to a stand, and the whole herd is again rounded up."

After a stampede a count is made of the herd to find how many head have strayed, and some of the men are sent out on fresh horses to scour the country and hunt up the lost animals. Single animals on such occasions have been known to stray a hundred miles.

The railroad, as we have said, is supplanting the trail. To what an extent this is the case may be judged from the statistics of a single road traversing the cattle belt. During 1884 the Northern Pacific Railroad carried into Dakota and Montana ninety thousand head of young Eastern cattle to stock new ranches, and also brought from Washington and Oregon eighty thousand five hundred head for the same purpose. Railroads now penetrate all parts of the cattle country except the Pan Handle of Texas. The stockmen of Texas recently advocated, in the national convention held in Saint Louis, the establishment by the Government of a national trail, 6 miles wide, leading from the northern boundary of Texas to the British territory, but this plan was earnestly opposed by the men from the northern ranges, who naturally want to

preserve their bunch-grass country for the increase of their own herds, and do not at all approve of the driving of Texas cattle upon them to fatten for market. To some extent young cattle are still driven from Texas to the northern ranges to stock new ranches, but this feature of the stock industry is diminishing year by year. The recently-occupied ranges of Western Dakota were stocked with cattle driven from Texas, and ten thousand head have been contracted for in that State, to be delivered next summer in the Bad Lands of the Little Missouri.

The railroads have not only greatly stimulated the cattle industry, but have done much towards improving the quality of the stock on the ranges by the facilities they afford for shipping in blooded bulls and Eastern cattle of good breeds. A marked improvement in the character of the range cattle coming to market is noticeable in recent years. Gradually the long-horned Texan type is disappearing from the northern ranges, supplanted by the Short-horn, the Hereford and the Polled Angus. Stock brought from the East is called "Pilgrim cattle." Usually these cattle suffer more the first winter than the natives, but they soon become acclimated.

DISTRICT ASSOCIATIONS AND BRANDS.

The stockmen on the ranges assume an ownership of the country occupied by their herds without having any title whatever to the soil, unless it be to a few quarter sections near the streams where their buildings stand. According to their ethics the original occupants of a given region alone have the right to pasture cattle upon it and to exercise the privilege of determining whether they will share their range with new comers. They divide the country into round-up districts, in each of which there is an association, with officers and by-laws. The boundaries of a district are usually a stream or a mountain range which forms an obstacle to the cattle "drifting." These districts vary greatly in size. Perhaps a fair estimate of their average area would be 2,000 square miles. The members of an association make an annual contribution to pay "round-up" expenses, including the building of corrals and the maintenance of the round-up parties. This fund is augmented by the sale of "mavericks." A maverick is an animal which has escaped branding when a calf following its mother, and the ownership of which, when found later, cannot therefore be determined. It is sold at auction, and branded with the purchaser's brand, the price being turned into the association's treasury. Every cattle owner devises for his use a brand, and records it in the office of the clerk of the county where his range is located. It then becomes his property, like a trade-mark, and he is entitled to claim all animals marked with it. He does not depend wholly upon the brand, however, but adopts also a peculiar method of slitting or punching the ear of the calf. The brands or ear-marks are explained in a pamphlet issued by the association, and are sometimes advertised in the local newspapers. The cowboys in any round-up district know all the brands in that and the adjoining districts. When a herd changes ownership, the purchaser acquires the right to the brand as well as to the animals, and advertises it as his own. He brands the calves, however, with his original mark, so that in time, as the older cattle are sold, his whole herd will be uniformly branded. So numerous are the brands of the large cattle companies which have absorbed the herds and ranges of small stockmen that entire columns in newspapers devoted to stock interests are occupied with cuts explaining them. Branding injures the hide, and the tanners and leather dealers are beginning to protest against it. At the Saint Louis cattle convention, held in 1884, they made an exhibit showing that side branding took from 2 to 6 cents per pound from the value of the hide. They recommended that branding should be limited to a single mark on the hip. Experiments are now being made at the University of Colorado to ascertain if a durable mark can be made with chemicals. If these experiments are successful the whole barbarous practice of punching red-hot irons into the flesh of the animals and gashing their ears and dewlaps with knives may be abolished.

Membership of an association is obtained by buying the herd of an old member or negotiating with the association as a body for admission. On some ranges new men bringing in cattle have little difficulty in being admitted to the association, but on others the occupants have passed resolutions declaring that the range is fully stocked and that no new herds will be admitted. Of course there is no legal power to keep out new men who may wish to bring in cattle, but such men would be boycotted by not being allowed to participate in the round-ups, by having their mavericks taken as the property of the association, and by being annoyed in many ways by the cowboys of the old occupants of the Territory. It is not often that a stockman will attempt to put a herd into a round-up district without the consent of the association. Trouble sometimes arises, however, between the owners of large herds and settlers who take up land for farming along the streams, fence in the water, and keep a few herds of cattle to graze near by. The stockman dislikes the settler. He wants the whole country kept as an open range, and has a hearty detestation of fenced fields. In the best grazing districts, such as the Judith Basin and the Tongue River Valley, Mon-

tana, the tendency is more and more towards the occupancy of the land by ranchmen who raise crops and keep small herds, and whose fences obstruct the freedom of the great ranges. In Wyoming and Colorado and also in the more southern regions stock companies controlling large capital have in many instances attempted to hold vast areas of pasturage by inclosing them with barbed wire fences without any right of ownership to the soil. In some instances these fences have surrounded the homestead improvements of farmers, and conflicts have arisen between the two classes. In Texas at one time there was found a Fence Cutters' Society, whose members rode about, equipped with big shears, and cut every wire that obstructed their way. Legislation authorizing the leasing of public lands for grazing purposes was urged upon Congress by the cattle convention lately held at Saint Louis. Such legislation is opposed by most of the newspapers in the West on the ground that it would hinder the development of the country by preventing the settlement by farmers of the arable valleys lying within the bounds of the extensive regions which are claimed as a whole to be strictly pastoral districts. It seems desirable, however, that Congress should, by some well-guarded measure, provide for the ownership of grazing lands in larger tracts than the homestead and pre-emption laws authorize. Otherwise the rule of the strongest will prevail and powerful companies will monopolize large tracts of country capable of supporting a considerable population. It is to the interests of owners of large herds to hold as much territory as possible that they may have ample range for the increase of their cattle, but public policy opposes this system of monopolizing the public domain and looks to the occupancy of the grazing belt by actual settlers owning small herds and farming wherever agriculture is practicable. In this way the resources of the immense areas, where cattle and sheep raising will always be the chief industries, can most fully be developed.

TERRITORIAL ASSOCIATION WORK.

The district associations are united into territorial associations. Of these larger associations whose affairs are conducted by delegates from the districts, the typical and best organized one is that of Wyoming Territory, which has 335 members. A leading feature of its work is a system of inspection of brands, carried on by salaried agents at the various shipping points. The object of this system is to identify stray cattle and restore them to owners. In an article on the work of the association for 1884, which recently appeared in the Northwestern Live Stock Journal, published at Cheyenne, Wyo., the following facts are given:

A number of inspectors have been employed during the shipping season at various points on the railroads, the more important stations being Council Bluffs, Saint Paul, Valentine, and Pacific Junction, with inspectors this season also at Miles City, Dickinson, and Mandan, the latter points acting as a check upon Saint Paul, or, in other words, a double inspection on Northern Pacific points, thus making the work in that quarter almost perfect. The total number of cattle shipped from the Territory embraced within the operations of the association have been 223,107 head for the season, of which it is estimated that about 166,000 in round numbers were from Wyoming alone. Of this very large shipment Messrs. Wyatt and Hartman inspected 109,677 head at Council Bluffs, among which they found 1,126 estrays; Thaddeus Cole, at Saint Paul, inspected 94,249 head, finding 453 estrays; at Valentine, Nebr., 24,762 head were passed upon by inspector Murray, who discovered 25 estrays, and F. E. Brainard, at Pacific Junction, inspected 14,429 head, finding 123 estrays among them. This work of inspection this season alone has saved to the stock-growers within the jurisdiction of the association a total of 1,727 estrays, returned to the owners or held in trust for them, representing a value of at least $60,465; and all this involving an outlay of a trifle more than $4,000.

Under the new law a total of 2,033 mavericks were discovered and disposed of by the round-up foremen. Heretofore the custom was, attended with more or less dispute, to brand mavericks with the brands of the owners of that portion of the range upon which they were found. This year all such stock was branded with the mark of the association, and sold at auction as required by law. The prices received for mavericks varied from $1.50 to $30.50 per head, according to competition in bidding, but we are informed that those who paid the very low prices have expressed a willingness to settle with the association at a reasonable figure.

"Rustling" under the new law has been greatly curtailed, and it is estimated that the number of cases of illegal branding have not amounted to more than one-twentieth of what they numbered in former years. In all cases where errors have occurred, or where the foremen have placed the association's brand upon the flesh-marked mavericks, remuneration has been allowed for such animals where proper proofs of ownership have been presented.

The work accomplished through the employment of a competent veterinarian, in conjunction with the territorial government, has been of a successful nature. Prompt action in this department of the service has doubtless saved much loss to the members

of the association as well as to all stock-raisers in the Territory. It has served to make the quarantine laws of value and done much to prevent irregularities among the stock throughout this section of country.

The detective service, too, has been successfully conducted. The officers of the association have been constantly upon the alert until cattle-stealing in Wyoming is now virtually one of the "lost arts." A number of cases have been prosecuted to a successful termination, others are still in the courts, where they are being vigorously pushed, and a few new cases will doubtless be instituted; but the day is not far distant when, under the present mode of dealing with crookedness in this direction, cases for cattle-stealing will be few. The business is now attended with so much risk that few men dare to embark in it, while matters have been made so lively for old offenders that they do not care to further pursue this vocation.

As a general rule no care whatever is given to cattle on a range, and the owners do not see them save at the semi annual round-ups. Some of the more prudent stockmen send cowboys out on the ranges after severe winter storms to succor animals likely to die by driving them to sheltered places, where grass can be found, but this is not commonly done. In a comparatively few instances owners of small herds separate them in winter from the mass of cattle on their range and feed them on hay after deep snow falls. The general practice, however, is to let the cattle shift for themselves the year round and to accept a winter loss of from 3 to 5 per cent. from starvation and exposure as an incident of the business. Only when the losses are higher than 5 per cent. do the stockmen grumble. Extremely cold weather is not fatal to cattle if they can get food. The dangerous weather is after a snow-fall moister than usual covers the grass, gets crusted and lies solidly upon slopes usually swept bare by the wind. Cattle will endure very low temperatures if their vitality is kept up by sufficient food. Stock-raising, as we have remarked, is successfully carried on in the British Northwest Territory, which lies west of Manitoba and north of Montana, although the mercury sometimes falls as low as 55° below zero. It is a remarkable fact that the winter losses in Northern Montana are no greater than in Kansas and Colorado, although the difference in latitude is ten degrees. Even as far south as Texas such losses have in some seasons of severe northers been heavier than on the ranges on the Sun and Teton Rivers, north of the Upper Missouri.

Two "round-ups" take place every year, the spring or calf round-up, and the fall or beef round-up.

Each association appoints a round-up captain, who gives notice of the place and time of assembly and superintends the work. The cattle owners send each a number of cowboys proportioned to the size of their respective herds, and each cowboy brings four or five good horses. Tents, wagons, camp equipage, and a cook are provided. A central camp, the principal corral, is established. The force is then divided into small parties and the whole district is thoroughly scoured from end to end by the mounted cowboys, who search every ravine and hollow, every *coulee* and wooded slope, and drive in the stock. Two or three men are dispatched to each of the adjoining districts to take part in the round-ups and claim stray cattle belonging to their home association. Near the central corral the great herd is held together night and day by riders who circle around them. In the spring the only work is to drive the cows with their calves into the corrals and mark the calves by branding and ear-slitting. In the fall late dropped calves are cut out of the herd for the drive to the shipping station on the railroad. Each owner or his agent is present to indicate the number of animals he wishes to ship. The drive is a joint affair, but on arriving at the railroad the cattle are separated into different pens according to their ownership, and the transportation to market and sale are matters which each owner arranges for himself.

SHIPMENTS TO MARKET.

The Montana cattle shipments are mainly by way of the Northern Pacific Railroad, that line having moved 3,447 cars, containing 76,560 head, during 1884, and the Canadian Pacific 432 cars, containig 8,740 head. The cattle shipped by the Canadian Pacific come from ranges on the Upper Missouri and its tributaries near Fort Benton, where the distance is nearly equal to points on the two roads. They are driven northward because of the better feed on that route. This movement was somewhat restricted last fall by the action of the Canadian Government in putting, for a time, an embargo on American cattle, because of the prevalence of pleuro-pnuemonia in regions far south of Montana, and the quarantine obstacles were not removed until the shipping season was pretty well advanced.

From the Wyoming ranges, including those of Western Nebraska and Southwestern Dakota, the shipments during 1884 are reported to have reached to the total of 166,000 head. Entire reliance, however, cannot be placed on figures giving a division

of the shipments by territorial lines, from the fact that the ranges overlap these lines and there is no agreement as to what number of cattle shipped at points in one Territory should be assigned to the product of another. Thus, many Wyoming cattle are shipped in Montana and *vice versa*. A better method of arriving at the total beef product of the ranges is to take the shipping statements of the railroads which traverse them. The figures of these roads for 1884 are as follows:

Union Pacific	109,6[illegible]
Northern Pacific	76,5[illegible]
Sioux City and Pacific	24,7[illegible]
Burlington and Missouri River Railroad in Nebraska	14,4[illegible]
Total	225,41[illegible]

To this should be added the shipments of Montana cattle over the Canadian Pacific and the shipments (of no great magnitude on lines other than the Northern Pacific) penetrating Dakota; also the number of animals slaughtered and shipped as dressed beef, which was about 8,000. With proper allowances due these items we may place the grand total of the beef product of the Northwestern range for 1884 at 250,000 head.

The Union Pacific Railway Company furnishes the following statement of the receipts of cattle at Omaha over its lines and at Kansas City over all lines;

Year.	Receipts at Omaha.	Receipts at Kansas City.
1876	48,220	183,378
1877	81,900	215,768
1878	95,600	175,344
1879	115,686	211,415
1880	121,860	244,709
1881	149,490	285,863
1882	123,286	439,761
1883	121,554	460,780
Total	857,596	2,217,018

The Kansas City receipts represent in great part the product of the Southwestern ranges in Texas, New Mexico, and the Indian Territory, but include, however, the cattle from Western Kansas and Colorado.

The annual movement of beef-cattle from Northwestern ranges to Eastern markets begins in September and ends about the 1st of December. Chicago is the objective point of all the moving trains, and is the great central cattle market of the continent. A project is on foot to establish a route to the East by the way of Duluth and the Great Lakes, and ship live cattle from Montreal by this route and from thence to England, to be fattened on English farms; but this movement has not yet got beyond the stage of interesting theory. The water route to the sea-board has thus far made no figure in the business of cattle transportation.

The current cattle rates over the Union Pacific Railway to Chicago are as follows:

From whence shipped.	Per car.	From whence shipped.	Per car.
Green River, Wyo	$176	Cheyenne, Wyo	$119
Bitter Creek, Wyo	166	Pine Bluffs, Nebr	121
Rock Creek, Wyo	133	Ogallala, Nebr	95
Laramie, Wyo	128	Plum Creek, Nebr	95

The following table shows the rate per car-load upon cattle loaded and unloaded by the owners or their agents and shipped from points on the Northern Pacific line in Dakota and Montana:

Shipped from—	To Saint Paul or Minneapolis.	To Chicago.
Mandan, Dak	$60 00	$95 00
Dickinson, Dak	65 00	100 00
Mingusville, Mont	77 00	112 00
Glendive, Mont	80 00	124 00
Fallon, Mont	91 00	126 00
Miles City, Mont	98 00	133 00
Rosebud, Mont	106 00	144 00
Custer, Mont	117 00	152 00
Billings, Mont	122 00	157 00
Merrill, Mont	129 00	164 00
Springdale, Mont	136 00	171 00
Livingston, Mont	144 00	179 00
Bozeman, Mont	155 00	190 00
Helena, Mont	160 00	195 00

A car contains from twenty to twenty-two head, and twenty-one head is the average load. It appears from the above table that the cost of transportation of a steer from a point about midway across the cattle belt (Miles City, Mont.) to Chicago is $6.33. To this must be added the cost of feeding en route, and the expense of the men sent with the cattle. Cattle trains run with the speed of from 15 to 18 miles an hour, and about once in twenty-four hours a lay-over is made to feed and water the stock, of from twelve to twenty-four hours. For this purpose the yards are provided at points at which hay can be procured at a cheap price. In the methods of transporting stock for market the chief improvements in recent years have been in increasing the speed of stock-trains and making more frequent stops for feed and water. There have been numerous inventions in cattle cars, but they have come into very limited use. A so-called "parlor cattle car" has a passage along one side for supplying hay and water to the animals without unloading. A suspension truck, lessening the jarring of the car body is meeting with some favor from railroad companies and shippers. It is evident, however, that the only important practicable improvements in the beef transportation system lies in the direction of shipping the carcass instead of the live animal, and thus at the same time saving the expense of hauling the waste matter in the steer and bringing the meat to the consumers in as good a condition as when the creature is driven from the range. A noteworthy beginning in this direction has been made during the past two years by a French nobleman, the Marquis de Mores, who with the aid of New York capital has established slaughter houses at several points in Montana and runs refrigerator cars to Duluth, Saint Paul, Chicago, and New York, having erected cold storage houses at numerous places to keep the meat until it is marketed. This enterprise and a few kindred ones of lesser magnitude operating in other portions of the cattle belt have got beyond the experimental stage, and are evidently destined to further development. They encounter the opposition of a large interest engaged in the handling of live-stock in transit, and especially of those vested in extensive stock yards in Chicago, and they need more cordial co-operation of the railroads than they now receive. The railroad companies being fully equipped with cattle cars naturally take a conservative view of and are disposed to look with small favor on a change that will make this equipment useless and would require the construction of expensive refrigerator cars.

EXPENSES AND PROFITS.

Profits in the cattle business vary too much from year to year to be definitely stated. The usual figures given at long established ranches in Wyoming and Montana range from 20 to 30 per cent. per year on the capital invested. The variable factors in the problem of the profits are the size of the calf crop, the extent of the depredations of wolves on the young calves, and the amount of winter losses. The productiveness of a herd is not a fixed figure. The rule is to count on calf crop equal to 70 per cent. of the number of cows. As the number of cattle on the ranges has increased, so it appears that the number of wolves "a bunch" of cattle will defend the calves against the attack of the marauders, when a cow and her calf stray away from the "bunch" the calf falls an easy victim to a famished pack. Of late the stockmen have begun to make vigorous measures to destroy these enemies of their herds. Bounties are

offered for wolf scalp by the county authorities, and the stock association frequently offers additional sums for killing them. Poison is the common method of destruction, the animals being much too watchful and fleet-footed to be hunted successfully with guns and dogs. Winter losses may wipe out the profits of years. In one exceptionally severe winter nearly one-third of the stock in Yakima County, in Eastern Washington, perished. In the winter of 1880 and 1881 the losses in Wyoming and Colorado were very heavy.

The "breaking-up storms" occurring about the end of March are most dreaded by the stockmen, the cattle, enfeebled by their long exposure, being in poor condition to resist their rigors and live for two or three days without food. The snow falling during the storm is moist and consequently does not drift and leave portions of the ground bare, like the dry snow of the winter months.

The average cost of raising a steer on the ranges, not including interest on capital and investment, is usually estimated by the large stock owners from 75 cents to $1.25 a year. Thus a steer four years old ready for market has cost the owner $4 or $5 to raise. When driven to the railroad he is worth from $25 to $45. A recent estimate, approved by a number of Wyoming ranchmen, placed the profit at the end of the third year on a herd consisting of 3,000 cows, 1,000 yearlings, and 35 short-horned bulls, representing in all, with ranch improvements and horses, on an investment of about $70,000 dollars at $40,000.

A writer in Harper's Magazine gives the following statement of profits on a herd of Texas yearlings (steers) driven to a range in Wyoming and pastured there until old enough for market:

Purchase.

1,000 head of yearling Texas steers, to be delivered on a northern range, at $15 each		$15,000
1,000 head of two-year-olds, at $18 each		18,000
Branding the same, say		250
Two years' herding, at $1 each per year		4,000
		37,250
At the end of the second year sell 750 head of the older lot, which will then be four years old, to be delivered at the railroad shipping station, at $33 per head	$24,750	
1,250 will then be left to be herded one year, at $1 each		1,250
		38,500
At the end of the third year sell the balance of first lot, which will then be five years old, viz, 200 head (allowing 5 per cent. for losses), at $36 per head	7,200	
Also 500 head of the youngest lot, then four years old, at $33	16,500	
Cost of herding the balance one year		500
At the end of the fourth year sell remainder of herd, which will then be five years old, after deducting 10 per cent. for missing and losses will leave 400 head, at $36 per head	14,400	
Add to cost for taxes and incidentals		850
Total product of sales	62,850	
Total cost and expenses		39,850
Profit at end of four years nearly 60 per cent		23,000
		62,850

The drawback to investments of this character is the fact that constant renewals must be made by purchase or the business will soon run itself out.

The same writer gives the following figures as written out by an experienced cattleman in one of our eastern counting-houses during the winter of 1880–'81, the object being to show what would be the result of an investment of about $50,000 at prices as they stood at that time:

Put on the range 1881, 2,000 cows, 140 bulls, and 1,000 one and two year old steers, cost $57,000; 1882, will brand 250 steer calves and 250 heifer calves; 1883, 700 steer calves and 700 heifer calves; 1884, 700 steer calves and 700 heifer calves; 1885, 800 steer calves and 800 heifer calves; 1886, 1,000 steer calves and 1,000 heifer calves; 1887, 1,300 steer calves and 1,300 heifer calves; total increase, 4,750 head each of steers and heifers, the heifer calves of 1882, and 1884 raising progeny during the three following years.

Inventory at the end of six years.

1,650 three, four, and five year old steers, average value, $30 each		$49,500
800 two years old, at $22 each		17,600
1,000 one year old, at $15 each		15,000
1,300 calves, at $10 each		13,000
2,450 cows and heifers, at $20 each		49,000
1,000 yearling heifers, at $15 each		15,000
1,300 calves (heifers), at $10 each		13,000
1,000 steers (original purchase), at $30 each		30,000
2,000 cows (original purchase)		40,000
140 bulls		5,600
		247,700
Ranch expenses first two years	$6,000	
Ranch expenses third and fourth years	8,000	
Ranch expenses fifth and sixth years	10,000	
Add 20 per cent. of the gross amount for losses during six years	49,540	
		73,540
Net value of herd at the end of six years		174,160

Experienced herdsmen on the northern ranges usually estimate the annual profit on capital invested at from 20 to 30 per cent. for years when the winter losses are no greater than 5 per cent. When much larger profits are reported it will generally be found on investigation that they are in part derived from the increase in the value of herds bought at the low prices prevailing a few years ago in regions then remote from railroads. When the roads advanced into the Northwest the demand for cattle to stock new ranges caused a sudden and considerable rise in prices, and fortunes were realized in the sale of old herds. The cost of managing a large herd is less per head than that of managing a small one, and this fact has led to the consolidation of herds and the formation of stock companies with large capital. These companies buy the herds of small ranchmen and they get possession not only of the cattle but of the country on which they range. A single cattle company in Wyoming advertises its ownership of ninety different brands, each of which represents a herd formerly a separate property. In other words this company has swallowed up ninety different ranches with their herds.

NUMBER OF CATTLE ON THE RANGES.

There is no accurate data as to the number of cattle on the Northwestern ranges. Range cattle are subject to local taxation and owners are required by law to make annual returns to the assessors, but, as may well be supposed, a species of property that escapes in part even the diligent search of its proprietors at the semi-annual round-up and must be sought for in the breaks of the prairies, the gorges of "bad lands," and the lonely defiles of mountain spurs, is never fully listed. The assessors have no way of verifying the returns of the cattlemen and the cattlemen themselves do not know, with any degree of exactness, how many animals carrying their brands may be roaming over the ranges. The assessors' reports for Montana for the year 1884 show a total of 855,963 head, with an estimated selling value, at $35 per head, of $30,340,850. Probably the actual number if an accurate count were possible, would be found to be not far from 1,100,000.

The following shows an estimate of the number of cattle in all the Northwestern ranges in the United States at the close of the year 1884:

Wyoming	1,500,000
Nebraska	500,000
Dakota	250,000
Montana	1,100,000
Idaho	300,000
Oregon	250,000
Washington	200,000
Total	4,100,000

FURTHER DEVELOPMENTS OF THE CATTLE INDUSTRY.

In nearly every section of the Northwestern cattle country the new-comer, seeking for a good opportunity to put in a herd, will be assured by the old stockmen that the range is already overstocked. Whether this is true or not he will only be able to as-

certain by careful personal investigation. Self-interest naturally leads the present occupants of the Territory to discourage the bringing in of more cattle. They wish to preserve ample room for the increase of their herds.

The individual who owns a thousand head looks forward to the time when by selling only the steers and keeping the heifers for breeding, they will increase to five thousand; the company owning five thousand expects in a few years to own twenty thousand or more. If the grass land now occupied is taken up by new herds the present owners of stock must be content to see their business soon limited to sale of the annual increase of their cattle. It is the opinion of competent observers who have traveled extensively in the grazing districts that the ranges will sustain four or five times as many cattle as are now upon them. Large areas which formerly sustained enormous herds of buffalo are entirely vacant; other large areas are but partially occupied; others, however, are pretty fully stocked, and here and there may be found a district, as, for example, some of the older-settled valleys of Montana, where the grass has been "eaten out" by overstocking.

Considerable new territory will be thrown open to the stock industry by the reduction of the large Indian reservations in Dakota and Montana. The Great Sioux Reservation, in Western Dakota, could be reduced to one-third of its present dimensions without any injury to the interests of the Indians. Measures are already in progress for cutting down about one-half of the area of the Crow Reservation, in Montana, which is now about as large as the State of Connecticut. The portion to be released from Indian control is nearly all excellent bunch-grass range. The largest of all the existing reservations is that of the Blackfeet Piegans, River Crows, and other tribes lying between the Upper Missouri and the British boundary, which covers an area about equal to that of the State of Ohio. It is proposed by the Indian Commission to establish three small reservations within this territory and to restore the remainder of the old reservation to the public domain. Nearly all the area which will be thus thrown open to white settlement consists of good grazing land. The Milk River Valley, which now lies wholly within the reservation, is especially valuable for range purposes, combined with farming by irrigation on the bottom lands near the river and its tributaries. In Washington Territory much good grass land has lately been added to the open range country by the reduction of the Moses Reservation. To confine the Indians in smaller areas than were assigned to them when they lived by hunting is to put them in the way of becoming civilized. The game which once furnished them with food and clothing is now gone, and the nomadic life encouraged by the possession of enormous reservations is not favorable to the formation of habits of industry.

With the opening of new ranges by the reduction of Indian reservations and the better stocking of the existing ranges, the cattle industry has a large field for further development. The local and territorial associations are performing an important work in systematizing the business and reducing the losses by straying and by theft. Indian depredations, once a serious matter, have been so far restrained as to be no longer important. Economy is introduced in the care and handling of cattle, and efforts are constant to improve the breeds. The stockman is no longer a lawless semi-savage adventurer, but is a practical man of business, and often an educated gentleman, who spends his winters in Eastern cities. In a word, the whole industry of raising range cattle is becoming established and well ordered. At the same time its profits are no doubt diminishing, but they are still large enough to attract fresh capital and enterprise, and to insure its expansion up to the full limit of the capacity of the grazing belt.

EUGENE V. SMALLEY,

SAINT PAUL, MINN., *January* 15, 1885.

APPENDIX No. 2.

STATEMENT PREPARED BY MR. LORENZO FAGERSTEN, OF CHICAGO, ILL., IN REGARD TO THE RANGE AND RANCH CATTLE BUSINESS OF THE UNITED STATES.

When ten years ago the first shipment of dressed beef was successfully landed in England, everybody connected with the cattle trade of this country hailed that event as the dawn of a new era in the profitable utilization of the vast public domain west of the Mississippi. At any rate it induced eastern and foreign capitalists to engage in cattle raising as a regular business. It soon became apparent that our primitive herds of Texas were unsuitable for the markets; that only the better class of our natives, *i. e.*, the cattle of the East of higher grade, which, originally from Europe, had by the mixture of the blood of the various breeds, lost the identity of any particular race, could compete with the stall-fed animals of England. The remedy was near at hand. The vast herds of Texas cattle were crossed with natives, and a distinct breed of American cattle, designated as range cattle, was gradually established. All commercial cattle at the western markets are now classified as Texas, native, or range cattle. The shipments of dressed beef to England continued without interruption, but subject to too many contingencies to be considered more than a speculative venture, instead of a legitimate business. The expansion of our foreign dressed-beef trade was evidently limited. Only the well-to-do demanded beef of an unexceptional quality, and their wants once filled the market became glutted to such an extent that American beef in England sold below the price in New York City. Our cheese, canned goods, and pork products furnished subsistence to the laboring classes at a cost even below the price of the beef of an inferior quality, which we might have sent. Finally, it was difficult to overcome the prejudice of the public at large. Not wholly without reason was American dressed beef at that time looked upon with suspicion. The cattle were slaughtered at our eastern seaboard, immediately on arrival from a journey of some thousands of miles from their shipping point. In transit, deprived of water and feed, in over-crowded cars, they reached the slaughter houses in the East in a reduced and unhealthy condition. The beef was cooled by ice, a reprehensible method, wrong in principle, the refrigerator method by cold and dry air being practically unknown at that time. What was true then holds good now.

Meantime the population of our cities was steadily increasing. The country was prosperous. The workingmen of America transformed themselves into beef-eaters, an important epoch in the history of our national economy. We discovered that there was a domestic demand adequate to the supply of range cattle, the common-sense breed of America. We knew that Chicago, the great mart for Western produce and the center of the most extensive railroad system of the continent, was equal to any new distributive enterprise, but unlimited capital was needed, with energy, perseverance, and business experience, to successfully combat prejudice and the jealousy of a class of men who always, from personal motives of gain, are opposed to any scheme that may threaten to curtail their enormous profits. At this stage prominent Chicago firms entered the market. The domestic dressed-beef trade was methodically arranged, daily quotations of dressed beef were posted as regularly as the prices of any other commodity; the incidental features of the trade disappeared, and the vital question of an equitable distribution of our abundant meat supply was solved.

THE ORIGIN OF AMERICAN CATTLE.

Native cattle.

Although at that early date no statistical record was kept, we know that the early settlers of the Eastern States brought from their trans-atlantic homes, among their chattel, live-stock of all kinds. That the immigrants, whenever they had the choice, selected only the best of their stock is a natural supposition. Then, as now, England and Holland were noted for their excellent cattle. As the Dutch and English emigrants predominated, we may omit the less numerous stragglers of other nationalities, and consider the cattle of to-day the direct descendants of English and Dutch stock.

With the superior natural resources of the New World, and the constant influx of a good class of cattle from Europe, it became an easy matter for the Eastern farmer to keep the breed up to the European standard. By the intermixture of the various grades of cattle the specific character of any particular breed was so modified as to necessitate the adoption of a new name for this new variety, and by common usage "Native" was selected. It is from this class that the exporter of live cattle or dressed beef makes his selections.

Texas cattle.

As the European cattle followed the emigrant from his old home, so the native cattle accompanied the Eastern pioneer on his western progress.

In the far Southwest, beyond the Mississippi, this advance guard of civilization encountered intractable herds of half wild cattle, descendants of French and Spanish stock of only common quality.

They had to a degree degenerated by adapting themselves to natural conditions and surroundings of their habitation, Texas.

This class of cattle became known as "Texans."

As there was no market for these herds, there was no incentive to care for their proper maintenance until the impetus imparted to cattle-raising in general by the first shipment of dressed beef to England led to the crossing of the two breeds.

Since that time an improvement is noticeable, car-loads of native bulls being shipped from Chicago and Eastern markets to Texas ranges every year.

The cross between the original "Texan" and the high bred "native" is classed as

Range cattle.

In this class is included a considerable number of original "Texans," which, from one to two years old, are yearly brought to the ranges lying north of Texas.

It is a remarkable fact, proved by statistics and figures obtained from practical men in the trade, that these "Texans," owing to changed conditions and external circumstances, show a decided improvement when mature for the market over the cross-bred cattle on a Texas range.

It may be truly stated that this grade, *i. e.*, range cattle proper, or the cross between native bulls and Texas cows, is *the breed* for the domestic market.

Admirably adapted to the range, this class is as profitable to the grower and butcher as satisfactory to the consumer.

Cattle statistics.

It is evident that any report of the number of cattle in the Western States and Territories must be very incomplete and unreliable, and any estimate based on such reports only approximately correct.

After allowing for unintentional errors there remains an unknown quantity, which may be expressed as the willful misstatement of the informant, so much the more liable to occur in this case, where the unit represents a considerable sum of taxable property.

Besides, the geographical distribution of this vast aggregation of cattle is so disturbed by local influences—weather and crops—that any estimate as to number and quality of any particular location holds good only for a limited period.

Assessors' returns not being obtainable, we submit the census of 1880, which may prove interesting in the new form we have adopted.

Comparative number of cattle, 1880, *and quality as indicated by local prices.*

Rank.	State.	Number.	State.	Quality.
1	Texas	1,000	Illinois	100
2	Missouri	432	Nebraska	99
3	Iowa	416	Kansas	93
4	Illinois	385	Indiana	91
5	Colorado and Territories	308	Wisconsin	85
6	Indiana	236	Minnesota	81
7	Kansas	198	Colorado and Territories	80
8	Wisconsin	195	Missouri	77
9	Minnesota	124	Iowa	65
10	Nebraska	113	Arkansas	50
11	Arkansas	113	Texas	40

COMMENTS.

The Indian Territory, Wyoming, Montana, and Dakota have since that time absorbed a large proportion of the natural increase of Texas and other States west of the Mississippi River, but the intentional errors and omissions of young cattle in the aggregate estimate of 1880 were probably large enough to balance, with the remaining portion of the natural increase, the number marketed for beef up to 1885.

The dairy interest of some of the States increases their rates of comparative quality.

The assessors' returns of the last few years, if properly analyzed, would show the effect of the deficient corn crop upon the distribution of cattle during that time.

CONCLUSION.

The supply of cattle in the West at the beginning of 1885 was probably equal to the total of census 1880 plus the largest portion of the natural increase, but the numerical center has changed since that time, owing to successive failures of the corn crop in Iowa, Missouri, Illinois, and Kansas on one hand and the increasing demand from northern ranges on the other.

Receipts and shipments, as reported by the secretaries of the principal stock-yards of the West for year 1884:

Chicago.

Receipts, 1,816,500; shipments, 791,000; city use and Chicago packing-houses 1,025,500.

Specification of receipts and shipments by railroads.

Railroads.	Receipts.	Shipments.
Baltimore and Ohio	1,800	19,400
Chicago and Alton	258,000	17,000
Chicago and Atlantic	2,500	68,300
Chicago, Burlington and Quincy	480,000	12,600
Chicago and Eastern Illinois	23,000	5,700
Chicago and Grand Trunk	2,900	1,800
Chicago, Milwaukee and Saint Paul	202,000	7,100
Chicago and Northwestern	269,000	13,700
Chicago, Rock Island and Pacific	232,500	19,800
Chicago, Saint Louis and Pittsburgh	4,200	70,600
Illinois Central	89,000	10,200
Lake Shore and Michigan Southern	2,700	200,000
Louisville, New Albany and Chicago	8,000	1,800
Michigan Central	2,800	180,100
New York, Chicago and Saint Louis	1,100	35,000
Pittsburgh, Fort Wayne and Chicago	2,000	117,800
Wabash, Saint Louis and Pacific	230,000	10,100
Driven into yards	5,000	.....
Total	1,816,509	791,000

Calves.—Receipts, 52,300; shipments, 31,000; city use and Chicago packing-houses, 21,300.

Analysis—approximate estimates.

Receipts.	Cattle.	Shipments.	Slaughtered.
Natives	1,000,000	720,000	280,000
Range cattle	400,000	71,000	329,000
Texas cattle	416,500	None.	416,500

Remarks.—Of the 720,000 natives shipped, 65,000 were probably exported to England direct from Chicago, alive and 20,000 exported as dressed beef.

An appreciable number of the rest were shipped West with 20,000 native calves. The balance went East.

Saint Louis.

No specified returns being furnished, we record the total number reported as 390,000 Texans received and 304,000 shipped.

Kansas City.

	Receipts.	Shipments.	Slaughtered.
Natives	100,000	80,000	100,000
Texans	430,000	350,000	

As the Western exodus of Texas cattle is here met by the Eastern influx of natives, the analysis is approximated, but the total aggregate is correct.

Council Bluffs.

No report from this very important transfer station. Correctly interpreted, such a report would illustrate the interchangeable nature of the cattle trade without materially changing the aggregate supply.

Minnesota transfer station.

	Receipts.		Shipments.
Range cattle from Montana	75,000	Natives and Texans to Montana	74,000
Texas cattle	74,000	Montana range cattle to Chicago	75,000
Not specified	14,000	Not specified	3,000
		Slaughtered	11,000
Total	163,000	Total	163,000

Remarks.—As very few cattle are shipped direct east from points west of Chicago, where all shipments are ultimately disposed of, except a considerable number of Texas cattle directed to northern ranges and shipments for local consumption to interior points, the difference between receipts and shipments at the above-mentioned stock-yards should be added to Chicago returns in order to get at, approximately, the number of cattle that are yearly marketed for beef.

The figures furnished by Mr. S. M. Sullivan, at the Minneapolis transfer station, are particularly interesting as showing the circuitous channels of cattle migration.

Of the 74,000 shipped to Montana no doubt a goodly number were Texans, direct from their far-off home, to be reshipped after two or three years to the Chicago market as range cattle.

Slaughter-house statistics furnished by leading houses.

	Average weight of cattle.
	Pounds.
Natives	900 to 1,400
Range cattle	1,100 to 1,350
Texans	800 to 1,050

Comparative value of different grades of cattle of 1,000 pounds live weight for the dressed beef trade, as ascertained by practical experience:

	Pounds.
The dressed carcass of a native steer	530 to 550
Cured hide	57½ to 60
Texas steer	570
Cured hide	70
Range steer	575 to 590
Cured hide	62½ to 65

	Pounds dressed.
1,200 pounds live native	670 to 685
1,300 pounds live native	750
1,400 pounds live native	810 to 840

These are startling figures at first sight, but they admit of a rational explanation. A native steer of 1,000 pounds live weight must not be compared with a Texan of the same heft. The latter, to attain this weight, is matured, while the former is in the lowest stage in the progress of his grade. The large intestines and the well-developed digestive organs of the native steer, inherited from ancestors and developed during generations of feeding on succulent grasses, with water *ad libitum*, counts against him, especially after having had his fill of feed and water before being driven to the slaughter-house. This disproportion disappears by the time he has reached maturity, when he has added 300 pounds of flesh and fat to his carcass.

The Texan, raised under different conditions, fed on the dry though nutritious grasses of his clime, where water is rather a luxury, and confined to his own resources for obtaining a draft, has no use for a large paunch, and nature does not provide it. At 1,000 pounds live weight he has reached the maximum of his development as a Texan. The crowded condition of Texas ranges, where 17 acres of grazing are needed for the proper support of every head of cattle per year, and the mixed composition of the herds, steers grazing among cows, restrains his development beyond that point.

On the other hand, the range steer, the happy medium between the two, better cared for than the Texan, with plenty of room on new ranges and no cows to distract him, hardier than the native, but with qualifications for a flesh producer inherited from his native progenitor, covers himself with fat instead of a thick hide like the Texan, for protection against the inclemency of the weather.

When ready for market he "figures out" to the satisfaction of all parties concerned, being evidently destined to become the cheap and nutritious staple beef of this continent.

GENERAL REMARKS.

Texas and the Indian Territory are breeding grounds of this country, 80 to 90 per cent. of calves are raised there, whereas 40 per cent. from an equal number of cows is considered a fair average on a northern range.

From 350,000 to 400,000 one to two years' old Texans are driven or shipped by rail to northern ranges every year, and it verily looks as if a national trail from Texas north, through the adjacent States and Territories, was desirable from economical reasons as well as sanitary

A large proportion of the number of Texas cattle reported as slaughtered at Kansas City, Saint Louis, and Chicago, is absorbed by the canned-goods trade.

The value of all cattle in general has increased with the improved quality, but the advance in the prices of dressed beef does not correspond to the increased demand and higher prices of cattle.

The price of cattle is to some extent enhanced by speculation among range owners, but prices of dressed beef are kept in check by the adoption of the more economical way of supplying the East with dressed beef from Chicago direct.

This result, so much the more desirable at this time, when the purchasing power of the people is at low ebb, goes to prove that "the greatest good to the greatest number of people" is the reward of improved husbandry.

CHICAGO, *January*, 1885.

APPENDIX No. 3.

STATEMENT PREPARED BY MR. THEODORE J. M'MINN, IN REGARD TO THE RANGE AND RANCH CATTLE BUSINESS OF THE UNITED STATES.

THE CATTLE DRIVE OF 1884.

During the year 1884, about five hundred thousand cattle were driven northwest over the old trail to the Northern Territories or shipped by rail. The year last past was noteworthy as that during which a larger number of cattle were shipped by rail than ever before. The average weight was, approximately, 600 pounds, and the value on the trail at points of shipment about $3 per hundred, or $18 per head, or $9,000,000 in the aggregate.

The drive mentioned was mostly sold at Caldwell and Dodge City, Kans., and at Ogalalla, Nebr. At the first-named place a comparatively small proportion was sold for distribution in the Indian Territory; at Dodge City a large proportion was sold for distribution in Colorado and New Mexico; at Ogalalla, in Nebraska, the balance was sold to ranchmen in Wyoming or Montana, or shipped East over the Union Pacific. Most of the cattle driven were steers. It has been estimated that the drive of 1885 would aggregate seven hundred thousand head, but the losses during the winter of 1884–'5 and hindrances to the drive are likely to be so serious as to abridge this estimate considerably.

Of the annual drive, a very small number, an insignificant but unascertained proportion, is sold to farmers; but, practically, the entire drive goes north for the replenishing of northern ranches or ranges.

QUALITIES OF BEEF.

So far as the different qualities of beef offered at Saint Louis, Chicago, and Kansas City are concerned there would be some variance, but to what extent it would be impossible to determine accurately. The cattle from Montana, Wyoming, and the northern territory tributary to Chicago disclose, when killed, a maturity and weight not found in cattle from more southern latitudes. Range cattle from the Indian Territory, and from other localities tributary to Saint Louis, kill to good advantage and have been favorite purchases with dressed-beef buyers, and also with buyers for live shipment to Eastern markets. The Western cattle sold at Saint Louis and Kansas City are practically of one grade, and lighter and less mature than the Wyoming and Montana cattle sold at Chicago. The native butcher steer, when suitable for the block, will weigh from 900 to 1,200 pounds, while the Texan steers, in approximate or relative condition, will only weigh 750 to 1,000 pounds; with this difference in weight remembered, the difference in price would be about $1 per hundred; that is to say, if the native would sell at $4.50 to $5.25, the Texan would sell at $3.50 to $4.25. But if the Texan and native were of equal weight the price would be almost identical. And as the Texas cattle gradually improve by breeding, the native and Texas prices come more nearly together. The Texas animal has small bones, and there is proportionally more beef to the weight for that reason. But the Texas steer, ungraded and unimproved, would be kept free from the influence of better blood if his percentage of good yield were seriously impaired by the infusion of any of the strains of imported stock. True, the Texas steer has more beef in his body than in his legs; if he had not, he would net an unprofitable amount of meat, as the original Texas leg was designed more for celerity than for yield. A Texas steer of 900 pounds average would net more than a native of the same weight, because the Texas of that weight is comparatively fat and would grade "good," while the native steer of that weight would grade "common." A good Texan will kill, as stockmen say, more to the hundred than a common or medium native; but a "good" native or well-graded half-breed will kill as much to the hundred as a "good" Texan. The Texas steer is expected to yield from 54 to 57 per cent., but in prime condition will "kill out," as it is phrased, 60 per cent. of meat. The Texas tenderloin is but little if any heavier than the loin of a good native steer.

FRESH, SALTED, AND CANNED BEEF.

Of the Texas cattle slaughtered at Saint Louis and Kansas City, about five-eighths at the latter place are sold as fresh beef, one-eighth is packed as salt beef, and one-fourth canned. In Saint Louis, seven-eighths of the cattle slaughtered are sold as fresh beef, and the remainder is packed or salted. The best of the killings at both points is sold as fresh meat, the next or second grade meat is packed in barrrels, and the poorest quality is canned.

Saint Louis in 1884 received 450,717 cattle, as follows:

By Chicago and Alton Railroad	21,051
By Missouri Pacific	190,578
By Saint Louis and San Francisco	100,119
By Saint Louis, Wabash and Pacific	61,374
By Missouri Pacific (Kansas and Texas Division)	917
By Saint Louis and Iron Mountain	32,268
By Cairo Short Line	6,905
By Louisville and Nashville	5,359
By Saint Louis and Cairo	700
By Ohio and Mississippi	3,534
By Indianapolis and Saint Louis	2,955
By Vandalia	5,332
By Toledo, Cincinnati and Saint Louis	469
By Chicago, Burlington and Quincy	2,414
By Keokuk and Saint Louis	1,094
By river	15,748
Total	450,717

Of the cattle received over the Missouri Pacific 60 per cent. were range cattle; over the San Francisco, 85 per cent.; over the Wabash, 10 per cent.; over the Chicago and Alton, 10 per cent.; over the Iron Mountain, 90 per cent.; and these leading lines brought in most of the stock.

WESTERN KILLING AND EASTERN SHIPMENTS.

The Western killing has not been uniform. Freight rates frequently changed, have made shipments of live stock to the East, first profitable then disastrous, and again remunerative; so that during a single year there would be such variance that no correct trace could be kept of the comparative magnitude of the dressed beef and live-stock shipments; but there are a few well-ascertained facts from which useful, if not conclusive, inferences may be drawn. The number of cattle annually slaughtered in the United States is over 6,000,000 head, and the weight 3,000,000,000 pounds. Ten years ago the Boston meat supply came from New England, and Western beef was comparatively unknown; now about 75 per cent. of the New England demand is supplied from the Western plains. In 1883 New England received 40,000 tons of live cattle and 106,894 tons of dressed cattle.

A late number of Bradstreet's contains an interesting article on the beef supply of New England, from which the following is taken:

"The books of the trunk-line commissioner show the number of tons of cattle and dressed beef respectively forwarded, all rail, to Boston and New England in each of the years 1878–'83 and the first nine months of 1884, as follows:

Tons of cattle and dressed beef.

Year.	Cattle.	Beef.	Cattle.	Beef.	Cattle.	Beef.
1878	95,256	2,870	58,340	2,223	153,590	5,102
1879	92,480	12,975	51,480	10,543	143,900	23,518
1880	124,674	22,305	56,049	20,465	180,733	42,770
1881	106,303	29,718	34,378	45,541	140,680	75,259
1882	62,548	29,830	13,862	59,318	76,410	89,145
1883	88,451	43,711	12,448	73,036	100,899	116,747
1884*	54,852	35,316	7,277	54,821	62,129	82,637

*Nine months.

The growth and dimensions of the exports of cattle and beef from Boston and Portland since 1876 appear as follows:

Tons exported, Boston and Portland.

Year.	Live cattle.	Dressed beef.
1877	1,096	42
1878	9,812	263
1879	26,863	493
1880	38,063	7,106
1881	52,271	18,079
1882	22,797	9,155
1883	27,806	9,853

The beef in cattle of the better grade is estimated at 55 per cent. of the live weight. Subtracting the exports from the receipts and reducing the cattle to beef at this ratio the following statement shows approximately the amount of Western beef received alive and dressed, respectively, for New England consumption since 1877:

Western beef eaten in New England.

Year.	Received alive.	Received dressed.	Total.
	Tons.	*Tons.*	*Tons.*
1878	79,077	4,470	83,817
1879	54,408	33,025	87,428
1880	78,468	35,664	114,132
1881	48,625	57,180	105,805
1882	29,487	79,993	109,480
1883	40,200	106,894	147,094

It appears accordingly that the New England consumption of Chicago dressed beef has risen regularly and very steadily from 4,740 tons in 1878 to 106,894 tons in 1883; while the consumption of Western beef received on the hoof has fallen from 79,077 tons to 40,200 tons, and that the former kind last year amounted to 72 per cent. of the whole. The most remarkable growth in the cattle trade has been the advancement of the dressed-beef business.

The following gives an idea of the extent of the purchases of that kind of stock:

Swift Bros. & Co	331,550
Armour & Co	253,000
G. H. Hammond & Co	140,000
Libby, McNeil & Libby	113,987
Fairbank Canning Company	120,000
Total number of head	958,537

The number of cattle slaughtered for canning purposes was 300,000 head more than in the previous year.

Regarding dressed beef, greater strides are making in the business than are generally realized. Dressed beef is not only prepared at Chicago, but in the far west, in sight of the cattle ranges themselves, a thousand miles or more west of Chicago. This was an innovation. In Montana there was especial activity in this direction. The meat-preserving establishments beyond the Mississippi are becoming numerous. The first venture was the Continental Meat Company, at Victoria, Tex. The next one was at Dallas, and others followed at San Antonio and Fort Worth in the same State. At Cheyenne, Wyo., and at other places that might be mentioned has the process of dressing and shipping meat been established, and with great success. The increased facilities for making dressed beef and increased sales of the article show conclusively that there is an increasing demand for it. When dressed beef was first introduced it met with considerable opposition, especially on the part of shippers of cattle on foot to the Eastern markets; but experience has shown that the meat reaches the consumer, when slaughtered and dressed and put in refrigerator cars, in a much better condition than if sent on the hoof. Regular trains of dressed beef are

now sent to the sea-board and intermediate points laden with dressed beef every day, notwithstanding the considerable advances from time to time in freight charges, and the submission of the shippers to what has appeared to them to be an arbitrary proceeding instigated at the suggestion of those shipping beef on the hoof.

The increase in the refrigerator-car business is just equal to the increase in the total receipts of cattle at the starting place of those cars, which shows that the new way is steadily encroaching upon the ground of the old, and despite the vast amount of capital arrayed against it.

Prices for range cattle were higher last year than in 1881, but lower than in 1882.

TEXAS FEVER.

There is no subject connected with the cattle business, in any of its forms or phases, about which there is such a diversity of opinion as there is about the Texas fever. Experts differ as to its cause, its effect, and its transmissibility. Concerning it, however, the following facts seem to be well established and indisputable: Texas cattle affected will communicate the disease to natives that cross their range or trail. Ailing Texas cattle will impart the disease to half-breeds or to other Texas cattle that have been "wintered" or away from the Texas range and acclimated in territory north of the South Platte; this latter proposition, however, has been questioned. The fever was never very destructive north of the South Platte until 1884, when Texas cattle were extensively carried to the north by rail. Whether the disease is transmitted by saliva, excretion, by ticks, or the hoof, or by all of these means, is not settled to the satisfaction of all interested inquirers and students. It has been said that the Texas cattle proper do not suffer from the disease, but this involves the apparent paradox that they can impart what they do not possess. Texas cattle over-heated, over-driven, taken rapidly into new and contrasting climates, or continuously confined and excited do suffer from the Texas fever, and will communicate their ailment to northern stock, whether it be half-breed, wintered or (acclimated) Texans, or native cattle, but the pure Texan will not communicate it to his fellow. This transmission of the disease occurs whenever the northern cattle cross the trail or invade the range of affected cattle. Gradual driving or the following of the spring northward by easy stages over the old trail acclimates the Texas cattle as they progress, and the disease does not appear. A leading cause of the spread of the disease along the line of the trail is the fact that the route has been varied and indefinite. No contignous farmer or ranchman could tell certainly when his cattle were ranging upon the trail; he was caught innocently and unawares, and, once affected, his herd was liable to melt away. Thrifty young northern cattle may recover; two-year-olds and over usually die. The establishment of a fixed, and particularly of a fenced, route, would greatly lessen if it did not wholly remove the danger of infection. Whether it be determined to take the cattle north by rail or trail, the establishment of quarantine grounds at distances of 150 or 200 miles, would seem to be advisable for the seclusion and resting and acclimating of the affected herds.

OBJECTIONS TO TEXAS CATTLE TRAVEL.

Farmers living along railroads over which Texas cattle are shipped object, to the extent of their ability and opportunity, to the transportation of that class of stock if it be stopped in transit; and the people of Kansas and Nebraska object, with all the vigor consistent with forbearance and magnanimity of the Western character, to the driving of the same cattle over an extended and indefinite trail; but which is the more urgent in opposition cannot be determined. A difficulty often spoken of as attendant upon the Western cattle business is the handling of affected cattle at the market yards. Several years of observation have demonstrated to me that this difficulty is but slight and easily obviated. Separated alleys for ingress and egress and separate pens and scales for feeding and weighing in Saint Louis make a case of infection the exception, and it need not occur at all. The yards at Chicago and Kansas City are nearly, if not quite, as well arranged, so that infection, if it occur, can usually be traced to carelessness.

PUBLIC SENTIMENT.

The people in Kansas and Nebraska are divided in sentiment upon the matter of the cattle trail; a majority of the inhabitants, however, are opposed to it, regarding its establishment of doubtful expediency or safety. There can be no doubt but that farmers and buyers of stockers and feeders in Missouri and neighboring States are not disposed to risk the purchase of Texas cattle during the dangerous season; that is to say from April 1st to November 1st.

TEXAS AND THE NORTHERN TERRITORIES.

As to whether the Texas cattle are considered helpful or hurtful to the northern Territories, at this time, the trade opinion is perhaps in a state of transition, certainly not of settled conviction, owing to the new conditions and problematical result of the agitation concerning leases, public land, and the trail. Under the old order of things, the Texas cattle were considered tributary and promotive of the cattle interests of the northern Territories, as the prolific breeding in the south afforded fresh and needed supplies to the fattening ranchman who had more grass than cattle in the north. Besides, Texas cattle sent to market from the western plains did not compete with the northern range cattle, being of an entirely different grade and weight. But the incoming settler at the north has appropriated small sections or bodies of watered land in the midst of vast ranges and so controlled the indispensable water privileges, thus abridging greatly the grazing area. Such ranges as have been secured and are now held by large herdsmen are becoming overstocked and further supplies of southern cattle, if the area is not protected, are sure to impoverish the remaining range. Again, the southern cattle were considered tributary and promotive of the northern industry so long as the increasing supplies brought no disease; but, as noted above, an indefinite and unknown trail afforded an opportunity for infection, which could not be guarded against, and the shipments by rail and the careless and indiscriminate driving from different points on the railroad across the country in 1884 resulted in losses that have spread an excessive and almost unreasonable apprehension throughout the north.

Railroad transportation would take cattle to the northern pasture grounds more rapidly than the drive by trail; but the new arrivals would have to be quarantined during the dangerous season, which would be about the time occupied by the drive, and the trail would have the advantage of adding weight, saving freight, and so acclimating the cattle as to remove danger of infection.

ARTESIAN WELLS.

Artesian wells have been sunk on or near the Sand Hill Plains of Texas, and the yield of water has been all and more than was anticipated, and quite sufficient for the purpose originally contemplated; but the want of title, either by lease or purchase, is an insuperable obstacle to the further or extensive sinking of an adequate number of wells for use on the great regions yet unappropriated and as yet unwatered.

THE TRAIL.

The closing of the old or the failure to establish a new and better trail will doubtless lead to the abandonment of the cattle business by a large number of Texans; to the indiscriminate shipment to market of cattle suitable and unsuitable; to a great glut in market supplies, and to a decline in value, to be followed in a year or eighteen months by reaction, scarcity, inadequacy, high prices, and ultimately by the fixing of such prices that meat to the laborer will become a luxury enjoyed, as in the old countries, but thrice or twice a week. Cheap meat must necessarily mean large herds, large grazing areas, and large capital. The capitalist is an inevitable incident; and the capitalist cannot be exterminated with any greater propriety or impunity than the owner of the small farm, but he can be governed and fostered and controlled in the interest of the meat consumers. Western grazing lands, those in particular proposed to be devoted to the trail, are not suitable for small agricultural uses; the capitalist in some localities could raise beeves for the feeding of a multitude, where the farmer could not support his own family, and, in his feeble attempt, would only hold ground capable of feeding hundreds in the hands of capital. The lands best or even well suited to agriculture are too valuable for grazing, and the capitalist would not care to put them to a use less profitable than the best use to which they could be adapted; but a small holder with nothing to lose and all to gain could well afford to go upon untillable land and get in the way of capital, if his relinquishment were to be the result of lucrative inducement. The question has two sides, and all meat-eaters are interested in a just and impartial determination.

RECEIPTS IN THE WEST, 1884.

Receipts of cattle at Chicago, Saint Louis, and Kansas City.

Chicago:	
Baltimore and Ohio Railroad	1,841
Chicago and Alton	257,913
Chicago and Atlantic	2,562
Chicago, Burlington and Quincy	480,481

Chicago and Eastern Illinois	23,016
Chicago and Grand Trunk	2,944
Chicago, Milwaukee and Saint Paul	201,844
Chicago and Northwestern	269,173
Chicago, Rock Island and Pacific	232,457
Chicago, Saint Louis and Pittsburgh	4,189
Illinois Central	89,208
Lake Shore and Michigan Southern	2,711
Louisville, New Albany and Chicago	8,119
Michigan Central	2,834
New York, Chicago and Saint Louis	1,096
Pittsburgh, Fort Wayne and Chicago	2,034
Wabash, Saint Louis and Pacific	230,303
Driven into yards	4,972
Total for year	1,817,697
Saint Louis, 1884:	
Chicago and Alton Railroad	21,051
Missouri Pacific	190,578
Saint Louis and San Francisco	100,119
Saint Louis, Wabash and Pacific	61,374
Missouri Pacific (Kansas and Texas Division)	917
Saint Louis and Iron Mountain	32,268
Cairo Short Line	6,905
Louisville and Nashville	5,359
Saint Louis and Cairo	700
Ohio and Mississippi	3,534
Indianapolis and Saint Louis	2,955
Vandalia	5,332
Toledo, Cincinnati and Saint Louis	469
Chicago, Burlington and Quincy	2,414
Keokuk and Saint Louis	1,094
By river and driven in	15,784
Total	450,717
Kansas City, 1884:	
Hannibal and Saint Joseph Railroad	4,399
Wabash, Saint Louis and Pacific	4,721
Missouri Pacific	56,909
Union Pacific	63,253
Southern Kansas	88,343
Kansas City, Fort Scott and Gulf	33,469
Kansas City and Saint Joseph	10,546
Atchison, Topeka and Santa Fé	24,561
Chicago and Alton	6,625
Chicago, Rock Island and Pacific	6,776
Driven in	15,124
	533,526
Chicago	1,817,697
Saint Louis	450,717
Kansas City	533,526
Grand total	2,801,940

NORTHERN GRAZING.

Concerning the origin of the northwestern grazing there are different accounts. There has been a common supposition that the fact of the thrift of the buffalo in former years, during the inclement season, suggested the feasibility of pasturing cattle on the wild range. But whatever might have been inferred from the habits of the buffalo, the first demonstration of the fattening effects of winter feeding in the north seems to have been an accidental discovery. In the winter of 1864-'65, just twenty years ago, Mr. E. S. Newman, who was conducting a train of supplies overland to Camp Douglas, was snowed up on the Laramie Plains. Arranging the train in habitable shape he turned the oxen out to die in the neighboring waste places. But the fatigued cattle began to improve from the start, and in March were gathered up in better condition than when they were set adrift to starve and *feed the wolves. This discovery led* to the purchase of stock cattle for fattening

in the north, and the trade has steadily grown to its present proportions, accelerated greatly during the past fifteen years by the building of the various roads in the north and west. The bunch-grass is perhaps the leading food of the northern range, but the gramma and the buffalo grasses also abound, and when the snows fall so deep that grass is not obtainable, cattle eat the white sage-brush, which retains its greenness all the winter; and in cases where this too fails, the black sage-brush is eaten, and all are nutritious. But cattle prefer the grasses, and will paw about the brush to secure it. But the light snows blow away as a rule and leave the grasses exposed. The white sage is second choice, and the black sage is the last resort. It seems to an extent true that the northern grass is more nutritious than the southern, but the fact that the cattle mature better in the North is perhaps attributable as much to the climate as to the food. But the best grass in all the grazing country is the alfalfa or lucerne. It has been known for centuries; the first trace of it being in Media; it was taken to Greece in the time of Darius, five hundred years before Christ, thence to Rome, thence to France, thence to South America. It is cultivated in Chili and came thence to our country, where it has proven to be of incalculable value to the feeders who are situated to make it available. This grass requires sunshine and well-mellowed and permeable ground. It is vigorous, perennial, and abundant as clover, is relished by cattle either green or dry, and will fatten swine. It ameliorates and enriches instead of exhausting the ground, because leguminous and broad leaved. It draws nourishment from the atmosphere, and the shedding of the foliage enriches the earth that bears it. It is no sooner mown than it pushes out fresh shoots, and under the best conditions will yield three crops per annum. In the dryest and most sultry weather, once well set and growing, it will send its roots 2, 10, or 15 feet to find moisture. In Wyoming two large crops per annum have been gathered. The stem grows from 2 to 4 feet high, and the yield is from 3 to 4 tons per acre. It needs, in most cases, careful cultivation, not being indigenous, but plains and valleys, before barren and useless, have been made fruitful and capable of sustaining thousands of cattle and hogs. And the cultivation necessary to the growing of alfalfa assures a large growth of timothy, the two making beeves that rival the corn-fed native in weight and quality. Cattle in Wyoming (on the Beckwith-Quinn ranch) which were rejected by a purchaser in the fall of 1883 as "tailings," were fed on the mixed timothy and alfalfa during the winter of 1883–'84, turned on the range during the summer of 1884, and last October weighed from 1,600 to 1,800 pounds, and were in no way distinguishable from the corn-fed natives of equal weight.

THE FUTURE OF GRAZING.

The future of grazing is full of problems and of possibilities. In the United States the annual consumption of meat is about 120 pounds per capita; in England, 105 pounds; in France, 74 pounds, and in Germany, 69 pounds per capita.

In 1864 the beeves imported into England sold for $65 each; in 1883 the price had gone up to $95 each.

In Prussia the increase since 1873 was a fraction over 1 per cent., while the increase in the population was over 8 per cent.

Ten years ago stock cattle in Texas cost $4 per head; now they cost from $15 to $18 per head.

The grazing area is becoming circumscribed; the people, the meat consumers, are rapidly increasing in numbers. Populous countries do not raise enough meat for their own consumption. State and national legislation in this country favors the small holder, and thus a population ultimately for which it will become impossible for the lands divided and subdivided into small holdings to furnish an adequate meat supply. Mexico, in course of time, seems likely to become the breeding-ground in place of Texas. The old Spanish land grants which have come down for hundreds of years unimpaired offer unbroken tracts in large areas suitable for breeding and feeding, and already American capitalists are inspecting and buying the best grounds.

But if that country becomes a new Texas the trail and transportation will become even more important problems than now, and quarantine, as now, an incident.

In any event, meat must gradually advance, whether rapidly or not depends upon the wisdom of the legislation.

The expediency of the trail, of leasing, of irrigation, and the profitableness of grazing depend largely upon the meteorological condition of the Northwest, which is ably discussed by Capt. Silas Bent, of Saint Louis, in the following paper:

METEOROLOGY OF THE MOUNTAINS AND PLAINS OF NORTH AMERICA, AS AFFECTING THE CATTLE-GROWING INDUSTRIES OF THE UNITED STATES.

Mr. President and gentlemen of the Cattle-Growers' Convention:

Congress, by its laws regulating the sale of public lands, recognizes three classes or grades of land, to each of which it has prescribed the maximum quantity that may be sold to the same person in any one locality, as follows:

"Six hundred by 1,500 superficial feet of mineral lands, 160 acres of agricultural *lands, and 640 acres of* barren or desert lands."

These have hitherto been thought to cover all the purposes for which the public lands would be required.

Since those laws have been enacted, however, and only within a few years past, another industry has been developed which requires the use of much larger areas of land to make it at all possible of economical and successful prosecution, and that is cattle growing. But it so happens that the lands required for this industry are by no means the best for agriculture or mining, and are often, on the contrary, quite unfit for either of these purposes, but are known and characterized as the grazing or "Buffalo Plains" of the West, from the fact that they were infested by these and other herds of wild browsing animals, who preferred the scanty tufts of the wiry but succulent and nutritious grasses that were found upon the plains to the more rank and abundant growth of the surrounding regions. This untrained instinct of these wild herds is nature's testimony of the special fitness of these plains for pastoral purposes, and we, as intelligent people, cannot do better than to follow nature's promptings in the utilization of these lands.

These plains extend from Texas to Canada, about 1,200 miles in length, and with a width easterly from the base of the Rocky Mountains of about 300 miles, making an area of 360,000 square miles, or upwards of 250,000,000 of acres of land, which, with rare and limited exceptions, are fit only for grazing and can never be profitably used for any other purposes. The laws should, therefore, be amended by adding another or pastoral grade to the public land schedule, and with authority for leases alone to be made to persons wanting such lands in tracts of not less than 20,000 nor more than 300,000 acres to each lessee for terms of twenty years, which would prevent these lands being monopolized by a few persons to the detriment of others, and would yet give to the tenant security in those proprietary rights necessary to prevent trespassing by others or disturbance from Government agents or officials.

As I have before intimated, these lands can never be converted into agricultural lands, notwithstanding the various schemes proposed from time to time for their irrigation and reclamation from agricultural sterility; for there are physical causes for that sterility which neither the power nor the ingenuity of man can change, and it has been thought that a brief discussion of these causes might not be uninteresting to the members of this convention, and I have been asked to give you my views in regard to them.

To do this will, of course, involve a wider range of investigation than if the simple facts and conditions of the problem were accepted without going back to their origin or cause, through the meteorological processes by which these facts and conditions are brought about.

I will first call your attention to this skeleton map of North America, where only the main ranges of mountains, chief lakes, and principal rivers are laid down, other details being omitted so as to prevent confusion. The principal range of mountains extending through Central America into Mexico is a continuation of the Andes of South America. In Mexico, however, these mountains are known as the "Sierra Madre," or "Mother Range," and which throws off two branches, one to the northwest, along the Pacific coast, into California, where it is known as the "Sierra Nevada" or "Snow Range," and which runs thence up into Oregon, where, with a lower altitude to the range, it assumes the name of the Cascade Mountains, and where it is broken into a number of detached, isolated, but majestic peaks, such as Mounts Jefferson, Hood, Adams, Ranier, Saint Helen's, &c., which stand as hoary sentinels surpliced in eternal snow to mark the great ways through which the moisture-laden winds from the Pacific Ocean gain access to the heart of the continent.

The other and in many respects the grander branch from the Sierra Madre is the Rocky Mountain range, which running almost due north, about the 110th and 120th meridians of longitude, until the parallel of 45° north latitude is reached, where this range sinks to an elevated "divide" of from 6,000 to 8,000 feet above the level of the sea.

Lying between these ranges and extending from the Sierra Madre to the Yellowstone Park, lies a plateau or plain of comparative sterility and barrenness, comprising much of the Territories of Utah, Arizona, and Nevada.

With this preliminary description of the map I shall now proceed to discuss some of the meteorological phenomena that have a direct bearing upon the question before us. It is generally believed that the sun is a direct evaporater of humidity and especially of the ocean waters, and that the evaporation from the ocean is mostly from the equatorial regions of the earth, that the vapor from this evaporation is transported by the winds through the upper regions of the atmosphere, directly north and south, to its points of distribution in the temperate and frigid zones.

This, however, I think is a fallacy, and that in reality, notwithstanding the enormus evaporation that does undoubtedly take place in equatorial regions, by far the greater part of that evaporation is precipitated back to the earth's surface within

the tropics, and that by quite a different process are the regions of the earth beyond the tropics supplied with the water from the heavens.

The sun's rays being more nearly vertical within the tropics, have so much the more heating power, and the surface waters of the ocean there are thus brought up to the general temperature of 88° F., from whence this heated water is carried north and south to the earth's extremities by grand ocean streams, which are the life-giving arteries of the oceanic and interoceanic circulation. Of these streams there are four, the two grandest and greatest of which are thrown off to the southward from the equatorial currents of the Pacific and Indian Oceans, whilst the remaining two are thrown off northwardly from the tropics into the North Atlantic and Pacific Oceans. The first of these latter is the Gulf Stream, whose general character is familiar to us all. The other is the Kuro-Siwo, of more recent discovery, which starts from the southeast coast of China and running northeastwardly, with a velocity of from 30 to 80 miles a day, and losing only 1° of warmth for every 300 miles that it travels, washes the south coast of Japan, and spreading a mantle of tepid water of upwards of 70° of temperature over the surface of the North Pacific, it envelopes the whole west coast of our continent from Behring's Straits to the equator with its genial warmth, and gives to that region the delicious climate, which is now becoming so well known to us all.

Now, whilst the sun by its heat in the tropics has prepared these waters for rapid evaporation, by giving to them their high temperature, yet the sun itself cannot and does not evaporate any portion of them, except through the medium of the atmosphere. And the power of the atmosphere to produce this evaporation is in exact proportion to its low temperature and its dryness as compared with the water at the time of its contact with these tepid waters from the equator.

The prevailing winds in the temperate zone are from the westward. The west winds which come to the North Pacific from the plains of Central Asia and Siberia are cold, contracted, and dry, with a temperature frequently below the freezing point, so that when they reach the tepid waters of the Kuro-Siwo they at once respond to the warm and expanding influence, and as they expand drink up by evaporation prodigous quantities of the latter, which, as invisible vapor or fogs, are borne eastwardly across the surface of the ocean to the west coast of our continent.

That portion of these winds that reaches our coast about the mouth of the Columbia River, is chilled by the Cascade Mountains, and made to yield such quantities of rain as to have produced a forest growth of vegetation so rank and majestic as to be unrivaled by any other forests of North America; and just north of the Cascades, from the open gateways through the mountain ranges, guarded only by the detached and hoary peaks before named, between which these west winds carry their burden of warmth and moisture to gladden and fatten the face of the interior of the continent, but which on their way pay such tribute to these majestic sentinels as to clothe and crown them in the purity of everlasting snow, and then reach the elevated region of the Yellowstone Park with still abundant moisture, which is dealt out from their hitherto invisible treasures with such royal profusion as to give birth to and keep in perennial flow the grandest system of rivers on the face of the globe, viz, the Columbia, McKenzie, Saskatchawan, Assinaboine, Yellowstone, Missouri, and Colorado, which, radiating north, east, south, and west from this immediate region, and with courses of thousands of miles each, distribute their waters into all the oceans surrounding the continent. This may therefore be not inaptly called the "Water dome of North America."

Stretching eastwardly from this "dome" to the mouth of the Saint Lawrence River, on the Atlantic coast, lies a declining ridge from which waters run north into the Hudson Bay and south, by the Mississippi, Illinois, and Ohio Rivers and their tributaries, into the Gulf of Mexico, and east of the Alleghanies, by the Potomac, Delaware, Hudson, Connecticut, and other rivers, into the Atlantic Ocean.

But all these mighty rivers that have their genesis in the direct pathway of these west winds across the contiuent are cradled upon the crest of the ridge just described by the great lakes of Superior, Michigan, Huron, Erie, and Ontario, which alone are estimated to contain one half of all the fresh water resting upon the face of the earth, and which, notwithstanding necessary enormous drain from them by evaporation, yet have always such a surplus of water as to keep an unvarying flow from the majestic Saint Lawrence River. Now the waters which supply the rivers radiating from what I have termed the "water dome" all come from this west wind from the Pacific, as I believe do also those which supply the other rivers in the Mississippi Basin, west of the Alleghany Mountains, together with those waters that fall into and make the great lakes.

Whether or not the waters that go into the rivers east of the Alleghanies come from the same source is doubtful. I think, however, that through local agencies they come from the Gulf Stream of the Atlantic. Yet it is not unreasonable to believe and affirm that by reason of the waters that do come from the prevailing west winds from the Pacific that it is the Kuro-Siwo of the Pacific that irrigates and fructifies the heart of the continent of North America.

Now, it may be asked, what has all this to do with the aridity of the alkali plains of Colorado and New Mexico? Very much, as I shall endeavor to show by first calling your attention again to the water supply that is carried under the wings of this west wind from the Pacific Ocean and distributed nearly, if not quite, across the continent (when not interrupted by the condensing power of intervening mountain ranges), since that is the gauge by which the quantity of water carried by these winds can be measured; and if found in one portion of these winds it is not unreasonable to believe that other portions of these same winds carry a corresponding quantity. But let us now see what becomes of that supply from that portion of these winds which strike the land south of Oregon, and which, being slightly chilled by the coast range of mountains and hills, give out moisture enough to envelop the coast with fogs and clouds during many months of the year. Passing thence into the interior these winds are thrown upward against the cold flanks and peaks of the Sierra Nevada, where, being condensed, they crown the latter with their coronets of eternal snow. Descending the eastern slope of the Sierra Nevada range, these winds reach the plateau of Utah and Arizona before described, so robbed of moisture that the earth's sterility is but the evidence of its unslaked thirst.

Continuing eastwardly these west winds then climb the western slope of the Rocky Mountains, but without moisture enough in them to clothe with vegetation the rock-ribbed walls whose somber and rugged nakedness attest the infrequency of rains upon them. Still the altitude of these mountains is so great, and therefore so cold, that their supreme peaks wring from the shrinking winds what little moisture remains in them to add sparkling coronets of snow also to their majestic heads. But these winds, pitching thence down the eastern slope of the Rocky Mountains, reach the plains of Colorado and New Mexico so completely dry as to be unable to give forth even a morning dew, and hence the alkaline sterility of these plains, which no human intervention can change or alleviate.

Now, I hope it has been made apparent that these plains, as well as the plateau of Utah, Nevada, and Arizona, owe their sterility to no accidental nor remediable cause, but to the immutable laws of nature, which are not to be changed by man; that these lands, as they stand and will forever stand, are not fit for agricultural cultivation, except in rare localities along the water courses, but are especially fitted for grazing and cattle growing, and which, in my judgment, should as a whole be set aside by the Government for the encouragement of that industry alone, since the water courses and the water privileges are imperatively required by the ranchmen, and without which all the rest of the grazing plains are practically worthless. Nor is this a hardship to the farmer, for agriculture has had and is still having more lavish and unpaid for favors conferred upon it by the Government than any other industry among our people, and the farmer should not complain if the laws are so modified—in justice to a great and valuable interest—as to require the farmers not to interfere with that interest by taking the kernal of the land for their own use and leaving naught but the husks for herdsmen.

If you ask wherein has agriculture been so favored by the Government, I will say that ever since Mr. Jefferson began to attract immigration to this country by proclaiming to the world that he would give to the agriculturist all the land he wanted in fee simple forever upon the payment of the mere cost of its survey, $1.25 per acre, while farmers in Europe are paying an annual ground rent of $20 per acre, agriculture has been and is subsidized to the annual amount of not less than $18.75 per acre, less the cost of transportation of that acre's products to the competing markets of Europe.

But not only that, agriculture is further subsidized by the hundreds of millions of dollars paid by the Government for the building of railroads to open up and make these lands of easy access and lessen the cost of transportation to and from; that the Government has been subsidizing agriculture for nearly one hundred years; has paid out upwards of $150,000,000 in the purchase of lands from foreign powers, in addition to that acquired by conquest, all of which have been and are being wisely bestowed in subsidies as an encouragement to agriculture, and which subsidies have been the means of building up the population and wealth of the country as nothing else could have done.

It is nothing but right, therefore, that now, when a sister branch of industry asks to be protected from influences that must be fatal to its success, though that protection should require the exclusion of a comparatively few farmers from certain regions of the public domain that are better suited for that industry than for agriculture, the Government and Congress will I am assure grant that protection.

Agriculture has already $13,000,000,000 invested in its industries, with thousands of millions of acres of land of the public domain still open and free to its occupancy, outside of these grazing lands, which the cattle-growers must have in undisturbed control.

It is not the purpose of this convention to antagonize the agricultural, nor any other element of the community, against the industry you represent. But when an indus-

try of the magnitude and rapidity of growth such as yours wants recognition and protection from Congressional laws, so that those engaged in it may know what they have to look to and depend upon before putting more money into that industry, I think there need be no hesitancy on the part of the representatives at this convention to appear before Congress and frankly and fully state their case, and ask its favorable consideration; for I feel sure an equally frank response will be accorded to their just demands, and no other, I am sure, will be asked.

You don't ask the Government to give you anything without fair compensation for the same; nor do you ask for any privileges superior to those given to other interests in the community.

Certain parts of the public domain are already set apart for mining, as others are set apart for agricultural cultivation from which cattle-grazing is excluded, not by the words of the law, it is true, but by the operations of that law which forbids those lands being sold in any other than such small lots and tracts as to entirely exclude from them cattle-raising upon a scale at all profitable for beef supply to our people and those of Europe. Then, as a matter of justice, let these certain ridges or plains, which nature intended for grazing ground, and the most of which can be used for no other purpose, be set apart, as a whole, to be called "pastoral lands," which the Government shall not alienate in fee simple to any one, but hold them open for leasing for terms of twenty years, in large tracts, and thus protect them from monopolies and at the same time preserve them under control for the use of the cattle-growers and the beef-makers for not only America, but for the rest of the civilized world.

SILAS BENT,
Las Animas County Cattle Growers' Association.

Texas fever was discussed by Professor Waterhouse before the members of the first national convention of cattlemen, and the following is taken from his address:

"The Texas fever perplexes the pathologist with mysteries that elude explanation. Facts which a costly experience has made familiar to many members of this body may not be so well known to men unacquainted with the business of grazing. It is surpassingly strange that only cattle in apparently perfect health transmit the disease, while animals sick with the fever do not spread the contagion. Cows dying of the complaint do not communicate the disorder to their sucking calves. In uninfected pastures, northern herds, though separated from Texas cattle only by a wire fence, do not catch the fever. Migration seems to be an especial source of danger. Cattle born in the infected districts are not usually liable to attack, but sometimes, when healthy southern animals are driven in the hot season only a short distance from their native pastures, they fall victims to the malady. The losses of stockmen are aggravated by the fact that the contagion selects the most valuable animals for destruction. Fat cattle are peculiarly subject to the distemper. The pestilence is most prevalent and fatal in the months of July and August. The germs of the disease, which may have lain nourished in the system, are developed into deadly activity by the heats of summer."

Upon the same subject, Mr. James D. Hopkins, veterinary surgeon of the Wyoming Stock Growers' Association, said to the convention:

"What is Texas fever? This question has been asked of me many times lately by those whose cattle were sick and dying. Veterinary science has much to learn in regard to this plague. We know how it is carried into healthy herds, and we know how to avoid it. We can tell you of the morbid lesions found after death, and we can describe to you its symptoms during life.

"It is to be hoped that the people of Texas will some day awake to the importance of this subject, and create the necessary laws that will enable them to employ an expert veterinarian whose duty it shall be to solve the problem of its causation, and give to the world a remedy for this pestilence. Experience and observation of experts has demonstrated that all cattle inhabiting the low, swampy region of the States bordering on the Gulf, as far north as Virginia, have this disease in a latent or mild form; that this disease is probably due to certain food upon which southern cattle subsist, whereby the system of these animals becomes charged with deleterious principles that are afterwards propagated and dispersed by the excreta of apparently healthy animals.

"This explanation would seem to be proved by the fact that when herds are trailed from Texas, the cattle of Indian Territory and Kansas suffer, if allowed to graze on the Texas trail. The Texas herds continuing north on changed food and water, become in sixty days free from the germs of disease, and are safe to mingle in any herd.

"Again, all cattle brought north by railroad, whether for beef or breeding purposes, leave the germs of Texas fever in all yards, cars, and pastures through which they may pass, and their virulence continues until after frost. Very fortunately northern cattle sick with this disease cannot transmit it to other cattle.

"Stock-growers of Texas have considered the subject of transportation of their stock to the north, and earnestly desire that they may have an outlet for their surplus stock in any way that it can be done with safety to northern herds, and believe that the solution of this problem is in the establishment of a national trail by the United States from the Gulf of Mexico to the British possessions.

"In the transportation of Texas cattle for beef purposes to Chicago and the Eastern States, I should suggest that this convention use every effort to induce railroads carrying such cattle to provide separate yards, shutes, and cars, and thereby prevent the infection of regular feeding places, which in the past have proved to be just so many centers of contagion, spreading Texas fever to many herds of cattle being transported for breeding and feeding purposes. It is unnecessary for me to cite instances of contagion from this cause. The public press during the past summer has made you only too familiar with accounts of disease traced to this great neglect.

"You may be assured that the experience of the northern stock-growers during the past summer in handling Texas cattle by railroad has not been so pleasant or profitable as to induce them to engage in it next year, unless under proper sanitary safeguards."

THEODORE J. McMINN.

SAINT LOUIS, *January* 31, 1885.

SAINT LOUIS, *February* 16, 1885.

DEAR SIR: In answer to your inquiry I have to say that the number of people employed in the cattle business in the Indian Territory, New Mexico, Colorado, Wyoming, Kansas, Nebraska, Dakota, and Montana can only be rather remotely approximated.

Since the formation of cattle companies, the distribution of shares has increased the number of persons interested beyond all discovery. One company represents at least 2,000 shareholders, another over 700, and in each case the company is represented by two or three names. But in the actual management and "employment," an estimate more or less accurate may be made.

In handling range cattle, two cowboys at least are required for every 3,000 cattle, and in States where agriculture is pursued and many of the cattle are found on farms the number of persons represented by every thousand cattle would be greater, so that at the least calculation there would be employed in the cattle business the following:

State or Territory.	Number of men employed.	State or Territory.	Number of men employed.
Kansas	2,299	New Mexico	520
Nebraska	1,669	Utah	198
Colorado	1,186	Washington	297
Arizona	203	Wyoming	781
Dakota	309	Indian	731
Idaho	286		
Montana	642	Total	9,121

Allowing for overseers, and other help this would make the aggregate something over 10,000, of which cowboys constitute not less than 9,000.

But the "cowboy" as formerly known is becoming daily a less and less important factor and comparatively infrequent personage.

Leasing, fencing, and the management of great herds by companies on strictly business principles, have gradually eliminated the old-time cowboy, who kept all the cattle he had, secured all he could by fair means or foul and a branding iron; who gambled at every opportunity, fought and shot without cause, and drank without stint. The ruffian of the plain is disappearing. Fewer cowboys are needed and a better class is employed.

Allowing for persons employed in the cattle business in connection with agriculture in some of the States named, 15,000 in the aggregate would not be far out of the way.

Very respectfully,

T. J. McMINN.

JOSEPH NIMMO, Jr.,
Chief Bureau of Statistics.

APPENDIX No. 4.

STATEMENT PREPARED BY MR. GEORGE B. LOVING, OF FORT WORTH, TEX., IN REGARD TO THE RANGE AND RANCH CATTLE BUSINESS OF THE UNITED STATES.

FORT WORTH, TEXAS, *January* 20, 1885.

DEAR SIR: In compliance with your telegram of the 5th and letters of the 3d and 7th instant, I herewith respectfully submit the following information (as near as I have been able to prepare it within the short space of time allowed) in regard to the Texas cattle trade in its present condition, and covering as near as I have been able to all matters of moment affecting the general interests of the United States in this particular line. I trust it will be sufficient for the purposes desired. The assessment rolls of the State of Texas, according to the comptroller's report, show that there were at least 7,000,000 cattle in the State on January 1, 1884. The extent of the whole area of Texas is 172,600,000 acres; each head of cattle, according to the comptroller's report, using on an average 25 acres. The actual number of cattle is about 9,000,000 head; the discrepancy in the comptroller's report arising from the fact that but few, if any, of our largest ranchmen render the full number of cattle owned by them for taxation.

After deducting land used by horses and sheep and land totally unfit for grazing, together with the land in cultivation, the average of grazing land to each head of cattle would probably be about 15 acres. These are not exact figures, but are near enough in the consideration of the live stock interests of Texas.

In round figures the stock are worth on an average about $17 per head. In Eastern Texas the price of cattle is about $13 per head; in Central Texas $15 per head; in Western Texas and the Panhandle from $20 to $25 per head, according to the grade and quality. This makes the cattle interests of the State amount in value to $153,000,000. I believe it to be an underestimate as to number, as there is quite a year's increase to be added since January, 1884; and there is a certain latitude permitted in giving in the number for assessment, which will offset any possible overestimate as to value. I have not the slightest doubt but that you will have figures presented to you as being more exact; in fact I am satisfied that from the south the figures will be amply represented in the report from the party delegated to furnish same from the southern part of the State. I shall, therefore, confine myself to a more general reply to the different subjects touched upon in your letters of instructions.

In classifying the cattle of the northern half of Texas, I should divide them three times: all east of Tarrant County being called Eastern Texas cattle; all west of Tarrant, Western Texas cattle, and those located in the Panhandle part of the State Panhandle cattle. In the Panhandle there are twenty-six counties of 16,500,000 acres. In this piece of country there are certainly no more than 500,000 cattle. In the western block, which consists of twenty-seven counties, 17,000,000 acres, there are a few less than 1,000,000 cattle. There is no way of arriving at the exact figures, as most of the counties are unorganized, although attached for legal purposes to other settled counties.

The movement of stock into unorganized counties has a tendency to permit the owner to escape taxation until permanently located, and will account for meager returns from the western country.

The next tier of counties eastward, called Northwest Texas, comprise 17,000,000 acres, and contain 1,500,000 cattle. Then the eastern section, of equal size, contains 1,250,000 cattle, as near as data at hand will show. The county of Greer, containing 1,678,080 acres, furnishes ample pasturage for 1,200,000 cattle. The title to this county is now the subject of Congressional action. It is the only absolute range county without fence in Texas; and, considering the abundance of water and good grasses, and natural protection to stock, is possibly the best grazing field for range stock. It is the only county where lands are not secured to any marked extent. The county of Tom Green, which furnishes a range for 250,000 cattle, does not belong to the territory embraced in my report, and can only be written up in detail by some one resident there. It is an empire in itself, the eastern portion being thoroughly stocked with cattle, horses, and sheep. This county embraces 12,579 square miles of grazing land. The ranges in the eastern portion have been stocked to their range ca-

pacity several years, the west and the northwest receiving the surplus; then as the territory became occupied, the ranges were developed in the west and in the Panhandle, a steady movement going onward from east to west, while at the same time the movement from southern ranges to the north and west was equally steady.

In Eastern Texas the average stock owned by each person does not exceed 100 head; in the west the average is about 600 head, and in the Panhandle 1,000 head. I arrived at these figures last year by a long and careful calculation; and while somewhat disappointing to a lover of great averages, the fact remains that the larger stocks of individual owners and corporations are offset by the greater number of middle sized and small stocks. It was but natural that the larger stocks should first move west. As the eastern ranges became overstocked, the question as to who should first move was always answered by the owners of the greater numbers, as they could afford to run outfits strong enough to be a defense in case of necessity.

Range cattle are not fed or sheltered in any portion of the State, except the eastern part, only as nature provides. In the last-named part of the State it is generally found necessary, during the winter season, to feed for a few months—the feed used generally being cotton-seed, prairie hay, or millet, but only in sufficient quantity to carry them through the winter, until the rising of the grass in the spring. Many ranges capable of carrying thousands of cattle are wasted for want of water, and much ground is virtually lost for want of some protection in the shape of timber or brakes in the land formation. It accounts for the stockmen taking risks from Indian depredations, in order to stock up lands on the edge of the plains, while a great territory between the settlements and the plains was not carrying cattle, except in most favorable localities. It also accounts for the scarcity of stock on 8,000,000 acres of the plains of Texas, which are amply grassed, but which afford very little protection and very little water. If taken as a range country, without further improvement, very few more cattle can be carried within the State without loss; but there is not the slightest doubt in my mind that by a system of improvements which owners can afford to institute, the carrying capacity of the range can be almost doubled.

The capacity of different parts of the State varies very materially, according to the quality of the grass grown and the nature of the soil. In the central portion of the State, where the prairies are covered with a thick coat of what is generally termed sage-grass, it is estimated that 5 acres to the animal is quite sufficient to furnish grazing the entire season; while in the western and Panhandle part of the State, where a great portion of the grass is devoured by prairie dogs and a considerable amount of the land is rendered worthless by "scalds" or bald places, it is generally estimated that it will require on an average 10 acres of land to each animal. In fact, there are places where I doubt if less than 15 to 20 acres would be found sufficient to furnish grass the entire season, one year with another. That part of the State known as the "Staked Plains," being almost entirely free from prairie dogs, is covered with a very thick growth of fine mesquite grass, which furnishes splendid grazing the entire season, and would, in my opinion, readily carry one animal to every 5 acres, and keep them in fine condition the year round.

In many counties along the line of the Texas and Pacific Railway, between Callahan County and the eastern edge of the Staked Plains, and as far north as the Panhandle, it is estimated that more range is eaten and destroyed by prairie dogs than by the cattle; in other words, if the dogs were destroyed that part of the State would furnish grazing to twice as many cattle as it ever can do as long as the dogs are permitted to remain.

Water (the first necessity) can be obtained in any portion of the State at less than $1 per acre, which amount is usually the difference in price between watered and unwatered land. The best is the artesian well, which will furnish water at different depths between 100 and 500 feet. Tanks can easily be constructed at a reasonable outlay, even if an artificial bottom should become necessary, in order to hold the rainfall, which is quite improbable, as, so far as the experiment has been made, no difficulty has been found in constructing tanks built in the ground, so as to hold water the entire season.

If a better water supply be obtained, vast areas of unused ranges which are not pastured in summer and which bear summer grass, would become available. The common sage-grass grows in abundance over tracts, which are almost bare of cattle, during the time it is at its best as feed. The first frost kills it, rendering the pasturage of little value during the winter months.

Up to late years nearly all ranges have been held by possession rather than by legal title, and the purchase or lease of solid bodies of land being general only during the last few years.

The improvements, outside of fencing, amount to but very little; not one-tenth of the western half of the State is fenced.

Last year Texas marketed as beef in the home markets at New Orleans, Chicago, Saint Louis, and *Kansas City fully 1,000,000* beef cattle, realizing an average of about *$25 per head. Panhandle and Western* beef cattle averaged $35, but the lighter and

less mature steers from the eastern section and from the southwest cut down the average. Texas sent up the trail 450,000 young cattle which did not realize over $17 per head. These cattle consisted of one and two year old steers and heifers. The number of beef marketed was excessive, and the low average in price is due to the marketing of immature cattle and dry cows, in order that the ranchmen might be able to meet the demands, owing to the withdrawal of money by Eastern capitalists, a consequence of the depression existing throughout the States.

Properly speaking, the whole of Texas produces range cattle, and I am unable to mark upon a map the territory which does not produce stock raised strictly upon the range, unless I except the eastern part of the State above referred to, where it is generally found necessary to feed to some extent during two or three of the winter months. The trail herds are furnished principally from the southeast, southern, and southwestern part of the State. The cattle used in stocking the ranches of the northwestern and Panhandle part of the State are generally taken from the central and eastern part, as there is no risk of loss on the new ranges by reason of the introduction of stock from these sections. The north line of Tom Green County, leading east to Eastland, and straight east to include Ellis County, and thence north as indicated on the map, is the line I should specify as the boundary of cattle liable to the so-called Texas fever. All cattle north and west of this line are subject to the disease from the passage of southern or coast cattle. It is not that cattle of the north are liable to disease from the passage of cattle from ranges immediately south of the line, but south of that line I have never heard of a case of so-called Texas fever, whereas immediately upon the line specified I have known ranchmen complain of losses by reason of the trail herds passing over the ranges.

I know of no good reason why Northwest Texas should be debarred from driving cattle to any range in or out of the State. I consider it of the utmost importance to the State that a trail should be established over which Texas cattle can safely move without risk to other stock; believe it to be necessary for the security of northern herds and believe it to be but justice to Texas. Any law preventing the movement of Texas cattle out of the State is manifestly unjust, because it is acknowledged that the cattle of the upper or northern ranges have not been charged with infecting any range; and even if our cattle were all diseased to the extent charged against the coast or Southern Texas cattle, there should be a privilege granted so far as a right of way over the common property of the United States, there being no hindrance to the movement of cattle from any portion of Texas to the crossing of Red River in Wilbarger County. All that is absolutely necessary is the right of way through the Indian Territory, which will not interfere with any vested right; then through Western Kansas and Nebraska. Beyond there is no opposition to the movement of trail cattle to any of the open ranges, which is based on any reliable grounds or complaint which is founded on truth. Whatever may be the disease it is no longer malignant after so long a drive, yet it may have been contracted by cattle further north through the agency of coast Texas stock, which have been quickly transported by rail to Nebraska and driven from points on the Union Pacific Railroad. The trail is necessary to Texas stock to offset any possible overcharge for a rail transit. Without an outlet for Texas cattle the range would soon become greatly overstocked, so much so that the beef would not mature, and, in fact, I very much doubt if after a few years there would be sufficient range to support the number of cattle that would be on it, much less to fatten and mature the beef. By such overproduction the business of cattle-raising would be entirely ruined, and the United States deprived of the million of fat cattle that are now being furnished annually from the ranges of Texas.

Allowing that no impediment existed by reason of any law, or any disease, or any antagonism by reason of the drive or rail transit, and while the railroads continue their liberal policy towards the stockmen, there is very much more in favor of rail transit than there is in favor of the old method; and in advance of placing these advantages before you, in detail, I would submit that the movement of one hundred and fifty thousand head of young stock from southern points in Texas to Wichita Falls, the terminus of the Fort Worth and Denver City Railroad (all of which might have been driven had the owners been so disposed) is an indication of the feeling of stockmen, which would be more marked this year if the certainty of a northern outlet would permit the transportation to be engaged at once. The use of the trail has been simply to remove the young stock from the southern portion of Texas to the markets of Northern Texas, the Indian Territory, Kansas, Colorado, Nebraska, Wyoming, Montana, and Dakota, as each market called for them. The stocking of these ranges has been a gradual process. Where the drive begins and where it ends, to-day, no man can tell; and it becomes defined now only a little south of Fort Griffin, in Texas, where most herds cross the Clearfork of the Brazos and end at Dodge, Kans.; whereas it used to be at Ogallala, Nebr., where the herds left the trail for their new destination. The latter-named place was formerly the selling point for all herds which were driven on speculation; whereas now nearly all the stock driven for sale on the open *market are disposed of at* Fort Dodge, Kans.

There were three recognized trails, one passing Fort Worth and entering the Indian Territory at Salt Creek, Montague County; one, the present Fort Griffin trail, and another through the Panhandle, west of Fort Elliott. The latter was last established and first abandoned. Before the settlement of Central Texas, the stocking up the Panhandle, the use of the Indian Territory as a grazing ground, and while the northern ranges were but scantily supplied with stock, the movement of cattle was unobstructed, either by fences or dead lines. Every foot of ground being open, it was an easy matter to select a good route and move the cattle over it at the good will and pleasure of the owner, and the abundance of grass enabled the cattle to gain flesh from the time they became reconciled to being under trail. Time was no particular object, because the trail stock required no time for recuperation, after reaching their destination as they could make the journey, even so far as Montana, while the grass was still green. After reaching their destination a month of close herding or line-riding sufficed to locate the stock and reconcile them to their new surroundings. In those times (even five years ago) a railroad built alongside the trail and carrying at low rates would not have carried a hoof. The open country afforded grass and water and proper driving was simply herding; a stockman could not herd cattle on his own range cheaper or keep them in better condition than he could on the trail. Then, as the country was not so heavily stocked as now, trail stock (and all stock, for that matter) gained flesh quicker, were ready for the drive earlier, had plenty to eat on the drive, and plenty to eat and ample room after the drive, and every stockman had the choice of several different routes. To-day all these conditions are changed. In Texas the western trail has been closed up and no stock pass directly through the Panhandle. The eastern trail has been closed up by farm fences three years, leaving in Texas, as before stated, only one that can properly be called a trail, which is the one leading by Fort Griffin to the crossing of Red River, at Doan's store, in Wilbarger County. This trail is simply established, because more stock travel over it than reach the Red River by any other route. There is no law to prevent Southern cattle from moving in open ground in Texas, nor has any such law ever been proposed. Still, the purchase and settlement of Texas lands, together with the State carrying so many more stock, has changed the aspect of the trail, and stockmen are more willing to pay freight charges, even from Southern to Northern Texas, and then fit up for the northern drive by trail rather than risk driving in, around, and between the farms and pastures, where, the driving limits being so much more contracted than in former years, the grazing is often inferior and the water supply often scant.

The drive through the Indian Territory is over a route none too well watered, and, in fact, the same may be said in reference to the grazing, even as far north as Dodge, Kans., where so many cattle are held during the summer season awaiting sale.

The conclusion is that the ranges of Texas do not put the young cattle in as good condition as they should be for the drive. There is not so much grazing on the available routes, and time is now an object, because trail cattle need to gain more flesh after arriving at the winter ranges before the winter sets in, as not so much flesh is gained as heretofore (if any) by the drive.

Now, the movement of cattle from Southern Texas to Northern Texas by rail is a success; and if the trail can be kept open from the northern part of Texas (say near Wichita Falls) to the northern ranges, it will afford one very satisfactory outlet for Texas cattle, as they can be shipped from any and all parts of the State to Wichita Falls, and then be driven from there to the northern ranges, while other railroad lines will furnish an outlet for those who prefer to make the entire journey by rail, provided they are permitted to unload the cattle after reaching their destination, which can only be satisfactorily arranged by providing ample quarantine grounds for the cattle to be held upon until a sufficient time has elapsed to insure safety to the native cattle from contact with the immigrant herds.

The Nebraska people have decided that all Texas cattle arriving by rail are diseased and all arriving on foot are free from disease; consequently, in the absence of any measures to protect him the Texas stockman is absolutely forced to claim as a right the way out of Texas by the way of the Indian Territory, Western Kansas, Colorado, and Nebraska. Before leaving the subject of rail transit, it may be as well to state that the trail movement has the advantage over rail transit as to cost of transportation and delivery; but stockmen would be willing to pay more for quick transit if the charges be regulated somewhat; and they fear, should entire dependence be on the railroads, the business would be squeezed dry of any possible profit by excessive charges on the part of the railroad company. There being no assurance of fixed and equitable transportation charges, stockmen cling to the trail as affording an alternative and safeguard against extortion. There is nothing to prevent young stock from being driven from even the southern part of Texas to the extreme northern ranges, and making the entire journey by rail in good condition, provided, they have proper attention while en route and are unloaded, watered, and fed as often as every twenty-four hours; and provided further, that the water and hay furnished them are of good quality *and such as range cattle* can use. Prior to the meeting of the stock-

men at Saint Louis, but after it was found that any movement of cattle to northern points by rail would be antagonized by all the northern cattle associations, I was informed that it was contemplated to inclose as a quarantine ground some large piece of railroad ground on the line of the Union Pacific Railroad, and use it as grazing land for all through stock, until competent veterinarians would pass them out with a clean bill of health, and I was somewhat surprised that the railroad men failed to submit the plan for the consideration of the assembled stockmen. I am satisfied it would have received their favorable indorsement as the solution of a vexatious and difficult problem, that is to say, the removal of Texas cattle to the northern ranges without danger to the native herds with which they come in contact.

The number of calves dropped on Texas ranges is considerably greater in proportion to the number of females than in the Northern Territories; and there is some difference in the calf crop in the northern and southern ranges of Texas. In the north the percentage of two-year-old heifers giving calves can be placed at 20 per cent.; in the southern portion I have had it placed at above 50 per cent., while the percentage from grown cows in either section would be about the same—from 85 to 90 per cent. Further north there is some difference, which I attribute to the climate, as the two-year olds do not (and certainly ought not to) bring many calves. Then, again, many of the northern-range calves die. With few exceptions the bulls run with the cattle all the year round, and there are quite a number of February and March calves dropped. Certainly a great number of these calves coming at this season of the year die, and quite frequently the mothers die also. February and March find all range cattle very weak, and the cow about to give birth to a calf is in no condition to do so. How they manage to raise any early calves in the northern part of Texas or in the ranges further north is a mystery; still there is no organized effort to prevent loss, which could easily be done by the ranchmen keeping the bulls from the cows until the proper season, say June or July, which would cause the calves to come after the winter was over, and the mother had begun to improve, and consequently there would be but little risk of either dying. In Southern Texas the two-year-old heifer with a calf by her side has a better chance of bringing a calf as a three-year-old than in the more northern ranges. In the latter, if a heifer brings a calf at two years old, she almost invariable fails to bring one at three years, which is not the case in the southern part of the State. In the northern ranges it would be much better if none of the heifers would bring calves until they are three years old, as the young heifers cannot or do not wean their calves, and have become so weakened from the continual drain on their system that the spring not unfrequently finds a fat yearling at the side of a dead cow, and the cow just coming three years old This applies only to range cattle, as there is very little difference, if any, in the increase of small bunches of fed cattle, either in the north or south. Probably there is more certainty in the northern part of the State in the number of calves from matured cows, and more in the south from young stock. In this connection I may add that the further north, after leaving Texas, the smaller the percentage of calves, and that the percentage might be largely increased in any part of the grazing country by a larger supply of bulls and more careful handling during the rounding-up season. As stated above, Texas produces already more calves than she can mature, while it is doubtful if the Northern Territories show such an increase in stock cattle as will prove that females can be run on a profitable basis. This does not apply to the Indian Territory, Colorado or Kansas, nor (except to a less extent) to Wyoming, Montana, and Dakota.

That steer cattle mature better on the more abundant grasses of the North is too well known to require any evidence to support the statement. This is the whole life of the Texas drive. Three-fourths of the cattle driven are steers; and if steers were not to be had, the drive would be very much curtailed. A Nebraska-Texan, by which I mean a steer produced in Texas, but removed to Nebraska (one or two years old), on the Chicago market at four years old, should average from 1,100 to 1,300 pounds. At the same age, if matured in the Panhandle or northwestern part of Texas, would weigh from 1,000 to 1,100 pounds; if matured in the eastern or southern part of the State, would weigh from 850 to 950 pounds; if matured at three years old (as many of them are), would weigh, respectively, from 100 to 200 pounds less. The northern ranges furnish grazing at a profit on the first cost of yearling and two-year-old cattle, and gain the additional weight over the Texas average. In further proof of the additional profit to be derived from producing steers in Texas and removing them at one or two years old to the northern ranges to be there matured, I might mention that quite a number of our largest and most practical stockmen of Texas have steer ranges in the Northern Territories, where they have for several years and hope to continue, to remove their young stock. Although the difference between Texas and Nebraska is greater, there is a very marked difference in the weight of steers from the southern and northern ranges of Texas. A steer raised and matured in the Panhandle of Texas will weigh, at four years old, 300 pounds more than if matured in the southern part of the State. This is due to the climate, to a larger acreage, to better grass, and to a more regular improvement in blood. The range system of Texas will

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never produce as large and well-developed steers as will the ranges in the Northern Territories. Hence it may be considered that a drive of 400,000 head adds at least 80,000,000 pounds of beef to the supply of the United States the second year after their removal; and the stoppage of this emigration would cause a corresponding loss from the present supply, which would be felt in 1887. It is not possible that this loss can be made up from the alleged breeding-grounds of the north; nor would the Texas ranges, which are already stocked, be able to mature the surplus. The consequence, as I view the outlook, would be a surplus of light Texas cattle on the butchers' market for a year, and then a great falling off in the supply from every range section in the United States. In other words, if Texas were required to mature all her steer cattle and only allowed an outlet for them when they were ready to go to the butchers, she would soon find herself overstocked, and with more cattle than could possibly subsist on the range.

The land system of Texas differs very much from that of the United States. The State was very liberal to the early settlers and those who fought for independence against Mexico; also, to the railroad companies, to the public schools, universities, and asylums. A couple of years since all unsurveyed lands could be bought for 50 cents per acre, and surveyed school lands could be obtained in seven-section alternate tracts at $1 for dry, and $2 for watered lands; so that millions of acres were disposed of. The State donated 3,000,000 acres for a capitol building. Finally, by enactment of the legislature, all the lands not otherwise disposed of were transferred to the public schools; and of these there are 25,000,000 acres left, which are principally in the Panhandle, the west and southwest; so that there is but a remnant available for settlement, and these only by purchase.

The number of acres any one can purchase is now limited to two sections; and it is expected that the legislature now in session may cut this quantity in two or more fractions, so that the acquisition of large tracts of land in Texas is a thing of the past, excepting the transactions are with other parties than the State. The railroads have large tracts but are more disposed to lease than to sell; and all their lands being in alternate surveys of 640 acres each, the other alternates belonging to the schools, it becomes necessary, to acquire a solid body of land of any dimensions, to arrange with both owners. Had Texas lands been disposed of in larger tracts, they would now be all under fence and the home-seeker compelled to look elsewhere until such time as the cattle companies found it to their interest to divide and sell their lands.

I regard the homestead and pre-emption laws of the United States as far more beneficial than the continual changes which have taken place in this State; and while I would approve leases permitting the owner of alternate or railroad sections to lease the school sections, to give him control of his range, I would not approve the leasing of large solid bodies, even if, as in this State, the leased lands remained available for actual settlement. It would be unjust to the lessee to have his lease made null and void at any time, and the settler would be slow to enter a country skirted by another man's wire fences.

The probable tendency of the cattle business in Western Texas is toward the establishment of large ranches, divided up into moderate-sized pastures, whereby the owner can institute a system to better govern his herds. Horse pastures, bull pastures, calf pastures, breeding pastures, weaning pastures, and hay lands all require to be, and will be, separated; and pastures for wintering stock can be, and will be, preserved; but as every change of this kind requires absolute ownership of lands, and large sums of money in addition to the outlay for stock, it must necessarily follow that considerable time shall elapse before Texas becomes a perfect and magnificent stock farm, where every animal will be insured against severe weather and every range so conducted as to carry its full capacity of cattle and no more.

The ranges owned by individuals and companies, fenced and unfenced, run up from the 160-acre homestead to the 350,000-acre tracts of the wealthy individual and corporation; but, as before stated, it is not that the lands owned are immediately fenced. There are counties in which the State has not a foot of ground, and still by riding through and over the county, all is found open except here and there a farm is inclosed, while the stock owned by the farmer is ranging on the otherwise unoccupied lands, which he or some neighbor or non-resident may own. Nothing short of a survey would be sufficient to designate State lands from individual and railroad lands, even in the west, where the bulk of the State school lands are located. The State lands, even on the plains, are intersected with large bodies which individuals have acquired.

The Indian Territory is only second to Texas as a grazing country, if numbers be considered. A great many cattle have been passed over the line from Texas; some of the civilized Indians are large ranch-owners, and by arrangement with the Indian authorities there are always more or less cattle of non-residents there. Like in Texas, the eastern cattle are inferior in size, which is due to the rough and timbered

ranges. The western prairie country produces better cattle. Here the tribes of Indians are now receiving rental, whereas it used to be paid to the individual who had some sort of a claim or right to be in the nation. In this case a lease brings into full use a large amount of valuable land.

In submitting this report I have to apologize for not going deeper into statistical details. Had time permitted I might have compiled the facts closer in connection with this great industry, but hope the outline presented may be sufficient for the purpose in view. All of which is respectfully submitted. I have the honor to remain,

Very respectfully, your obedient servant,

GEO. B. LOVING.

Hon. JOSEPH NIMMO, Jr.,
Chief of Bureau of Statistics, Washington, D. C.

FORT WORTH, TEX., *February* 3, 1885.

DEAR SIR: I send you by this mail a map of Texas, divided into five different sections intended to divide the country, with reference to the class of cattle raised in each part of the State and its adaptability to stock-raising on the range.

That part of the State designated as East Texas is almost entirely a timbered country, being principally covered by a thick growth of pine; the bottom lands, however, on the different streams furnish reasonably fair grazing for stock. The country is principally settled by small farmers; that is to say, there are but few (if any) who make an exclusive business of raising stock in this portion of the State. However, most every farmer has more or less stock, numbering, generally, from fifteen to twenty to one hundred head. These cattle manage to find sufficient feed during the spring and summer to keep them in reasonably fair condition, but are generally required to be fed, more or less, through the winter season. The feed usually consists of cotton seed or straw and is furnished without much cost to the owner. The cattle raised in this part of the State are a very inferior lot as compared with those raised further west, and consequently bring much less in the market. The average two-year-old raised in Eastern Texas is not as large as the one-year-old raised in the northwestern or western part of the State. Each farmer or stock owner in this part of the State usually sell off all their surplus or at least all their steer cattle every spring, which are usually bought up either for stocking the ranges of the western and northwestern portions of the State or for the Kansas or northern drive. They are generally shipped to some point further west in the State, or at least sufficiently far to put them beyond the timbered region, when they are placed on the trail, and in this way driven to market. Although this part of the State is really not adapted to stock-raising, and but few are owned by any one individual, yet taking in the entire eastern part of Texas there are altogether quite a number of cattle, probably one-half to three-quarters of a million head.

That part of the State designated as Central Texas was at one time (and up to within the last ten or fifteen years) a fine grazing country. It being also well adapted to agricultural purposes, it has during the last ten years been settled up by farmers, until there is no longer room for any large herds in this part of the State; not that it lacks the essentials of a good grazing country, but, on account of the fertility of the soil, it has been found more profitable for agricultural purposes. Still there are at this date a great many cattle raised in this part of the State, but on comparatively rather a small scale; that is, there are no large ranches and but very few in this part of the State that own over one thousand head; the average for Central Texas would probably be about one hundred. The cattle raised in this section were at one time as fine as could be found in any part of the State, but at the present time, on account of the country being to some extent overstocked, they are greatly inferior to those raised in the northwestern or western part of the State, but are considerable better than those raised in the eastern port. There are in this part of the State probably one and one-half million of cattle. The increase (in fact, almost all the steer cattle one year old and over) are annually driven to the northern States and Territories, there being in this locality but very few beeves kept until they arrive at maturity.

That part of the State designated as South Texas probably contains more cattle than any other division of the State, it being estimated that there are fully two and one-half million of cattle in this locality. The cattle raised in this section are of larger frames than those raised in the eastern or central portions of the State, but are inclined to be rough and bony, and are noted for the length of their horns and legs. There are a great many beeves matured in that part of the State lying next to the coast that find a market in New Orleans, in fact but few matured cattle are ever

shipped from Southern Texas to any other market; but the majority of the surplus or steer cattle raised in this part of the State are driven to be matured in the northern ranges, being removed from Southern Texas at the ages of one and two years. They are now principally driven over what is known as the Fort Dodge and Griffin trail, which is outlined on the map referred to, from the crossing of the Colorado River to the crossing of the Red River, in Wilbarger County. I have not attempted to locate this trail further south than the Colorado River, from the fact that there is no designated route further south than that point. There is but little difference in the market value of cattle raised in Southern or Central Texas, though there is quite a difference in the quality. Southern Texas cattle, as a rule, are larger, while the Central Texas are more compact, "pony" built, and in this way make up in quality for the deficiency in size. The greater part of Southern Texas is alone adapted to grazing purposes, the land being regarded as unfit for agricultural purposes.

That part of the State designated as Western Texas is pre-eminently a stock-raising country, being entirely unsuited and almost totally worthless as an agricultural country. As is shown by the map, a great deal of this part of the State is rendered useless on account of the scarcity of water. All that part of it which is supplied by water is now stocked to almost within its full capacity. I estimate that there are in this part of the State, at this time, fully one and one-half million of cattle. They are, generally, a much better class than those raised in Southern Texas, and are second only to the cattle raised in the northwestern part of the State. A great deal of this is, comparatively, a new country, all that part of it lying tributary to the Pecos River and west having been only stocked within the last four or five years. This part of the State matures a very good class of beef, that will usually weigh in the Saint Louis and Chicago market about 900 pounds, gross, at three years old, and from 1,000 to 1,100 pounds, gross, at four years old. They generally become sufficiently fleshy at some time during the season to make good beef, without being driven to the northern ranges, as is required of the cattle from the southern part of the State. Western and Southern Texas are doubtless the best breeding portions of the State; that is to say, the ranchmen receive a larger percentage of calves from these two localities than are produced in any other part of the State.

That part of the State designated as Northwest Texas includes what is known as the Panhandle and is, without exception, the best stock country in Texas, as is evidenced by the fine herds which now occupy this portion of the State. The entire part of Northwest Texas is, comparatively, a new country, having been stocked within the past six or eight years. The western part is only partially used, at this time, on account of the scarcity of water, it being almost entirely on what is known as the "Staked Plains," which is, perhaps, as fine a grazing region as can be found in the United States, but is almost destitute of water and shelter. The former could, doubtless, be supplied with artesian wells or tanks made in the drains or basins; but will, probably, never be used to good advantage, on account of the scarcity of shelter, which could not be supplied with artificial means. All that part, however, east of these Staked Plains is reasonably well supplied with both water and shelter. Much of the range, however (as stated in my former report), is destroyed by prairie dogs, but still continues to furnish abundance of grass for all the stock that has, so far, been placed upon it. I regard this as the most valuable grazing section of the State, from the fact that it is not only a good breeding country; but, on account of the climate and the quality of the grass, is, perhaps, second only to the Northern Territories as a beef-producing range. This part of the State turns off, annually, a great number of beef cattle, a part of which are driven south to the Texas and Pacific Railway and shipped to Saint Louis and Chicago, while those in the more northern part are driven to Dodge and other shipping points in Kansas, and from thence shipped to the markets above mentioned. There is no difficulty found in this part of the State in introducing improved bulls and breeding up the herds; consequently, the cattle in the northwestern part of the State are much better improved than those further south, where, on account of the warm climate, it has been found exceedingly difficult to introduce improved bulls. The number of cattle in this part of the State will, probably, not fall short of two and one-half million. There is but little farming done in either Northwestern or Western Texas, the small amount of land cultivated being usually done by small stockmen and run in connection with their stock business in a small way, merely to furnish feed for their horses during the winter. In this part of the State, as well as in Western and Southern Texas, the cattle manage to live the entire season on such food only as nature provides for them, which was also the case, until the last few years, in Central Texas; but during the last winter (and to some extent for one or two winters previous) it has been found necessary to feed, in some localities, for a few months during the winter in the central part of the State.

You will notice from the map that I have marked a dotted line, designated as the quarantine line, which is intended to separate the southern and eastern portions of the State from the northern part, as near as possible on a line, so as to divide the cattle

on the southern and eastern part, that may impart Texas fever, from those on the northern part, who will not impart it, but will contract the disease from those driven from the southern or eastern part. You will understand it is difficult to draw this line exact; that is, to locate or say just at what point the cattle will impart or contract the disease. I am of the opinion, however, that this line is as near correct as it can probably be made.

If I have not been sufficiently clear, or you should wish any further information on any point touching this interest, I shall take pleasure in answering any inquiries that you may wish to make.

I have the honor to be, very respectfully, your obedient servant,

GEO. B. LOVING.

Hon. JOSEPH NIMMO, Jr.,
Chief of Bureau of Statistics, Treasury Department, Washington, D. C.

APPENDIX No. 5.

STATEMENT PREPARED BY MR. D. W. HINKLE, OF SAN ANTONIO, TEX., IN REGARD TO THE RANGE AND RANCH CATTLE BUSINESS OF THE UNITED STATES.

1. There are in Texas 175,587,840 acres of land, about one-half of which is devoted to stock raising; the greater portion of these lands lie west of the Texas Central Railroad, and the principal part of them devoted strictly to *range* cattle west of the International and Great Northern Railroad, extending north to the upper Panhandle.

All of the Indian Territory is used for range cattle, except lands occupied by towns and railroads, say about 40,000,000 acres, out of a total area of 44,154,240 acres.

2. As to the number of cattle raised in Texas annually, you will see by the comptroller's report of *tax-paying cattle*, 6,517,524 head reported on hand November 15, 1884. The product from that number of cattle would be a fraction less than 2,000,000 head of calves, one-half of which would be female cattle, leaving in round numbers about 900,000 head of male cattle for sale to beef growers and for driving purposes. In 1883 we had, as per comptroller's report same date, 6,054,488 head, showing that stocks had increased 463,036 head, though many female, as well as nearly all the young male cattle had been sold. It is safe to say that the State produces annually 1,000,000 head of cattle for sale, divided as per last year, 1884. (See comptroller's report.) Seven hundred and fifty thousand cattle shipped and driven to northern ranges, worth at points of delivery, at $16 per head, $12,000,000. Two hundred and fifty thousand head of beef cattle were shipped to the various markets North and South, (say Saint Louis, Chicago, New Orleans, Kansas City, Memphis, and others), worth, at $22 per head, $5,500,000. We have in the State a population of about 2,250,000 people, who all eat and largely of *beef*, and while the bulk of the beef eaten consists of female cattle, they are worth, at a low estimate to the raisers, say 300,000 head of cattle worth in Texas markets, $5,600,000, showing that Texas raises and *feeds* to a hungry world $24,100,000 worth of beef yearly.

The third question is answered in No. 2.

4. It is absolutely necessary to get a trail from Texas to the Northern States and Territories, owing to the fact that too few railroads lead from this State northward, and the roads now in operation could not, however willing, handle all of the cattle for export, and then it would give railroad companies a chance to pool on routes and make the expense of sending cattle to northern ranges too great.

Individually, I prefer to ship (have been a shipper for two years) rather than drive, and think the rail transportation *absolutely* necessary to this the greatest breeding country in the world.

Texas cattlemen *generally* own the land on which cattle are grown, and pastures ranging from 20,000 to 200,000 acres, securely fenced, are to be counted by scores; in fact, South and West and North Texas is nearly all owned by cattlemen, and a large per cent. of them have good fences. These are not farms, they are pastures. I name two men who own in this country pastures embracing more than 250,000 acres each. T. C. O'Conner, the richest cattleman in the United States, lives in Refugio County; R. King, in Nueces County. Many, very many, others own pastures of 100,000 acres and over.

You will see by the fact that as Texas is being fenced by large pasture owners, that in a few years railroads must furnish the necessary transportation to carry the cattle to market; in fact, the country south of the Galveston, Harrisburg and San Antonio Railroad is now so fenced as to depend on rail shipments, and a large per cent. of all the young cattle sent north for maturing comes from that region (would say at least 300,000 head). The letter to you from George Olds, esq., general traffic manager, is well conceived and deserves your consideration. He expresses my views about quarantine grounds. I think there should be quarantine grounds allotted to the railroads, and the points designated by him will suit us.

To sum up a very cursory report of so great a trade, we want to get our cattle to market; drive or ship by rail, prefer both, but if both can't be had, give us all you can. You can add *facts:* I know that Texas is *per se* the breeding country of the United States, and has and will produce more beef, or rather young cattle, than any

two States or Territories in the Union. We raise twelve calves for every cow owned (in her lifetime), Kansas raises about ten calves to the cow, Nebraska eight calves, Wyoming and Montana and Dakota about six calves to the cow, Oregon four calves to the cow (strictly range cattle).

You will see that with the above facts, that if Texas was cut off from the markets of the world, that the States and Territories quarantining against her cattle would enhance the value of *beef* and make the poor man pay more for it than he does now, and that it is due very largely to this State that the laboring classes in the East have been able to eat beef. Texas has more female cattle than all of the balance of the States west of the Mississippi River, and has been "*The Mother of the West*" in the cattle business. Her cowboys opened up to the world the markets of Kansas and other Northwestern States. They drove the Indians from the great northern plain and opened them up to civilization.

As to the subject of artesian wells and the practicability of furnishing water where none now exists, I am too little posted to give you the data requested, but I think in the near future large tracts of dry lands in Texas and other Territories will be furnished by that means and thus add to the beef production of the country. I estimate that there are about 23,500,000 acres in this State now unavailable on account of the scarcity of water, which can and will be brought into use through the means of artesian wells. Fully 10,000,000 acres are in the same condition in the Indian Territory and 28,000,000 acres in New Mexico.

There is no doubt in my mind that it will always pay stockmen and beef eaters better if they will allow Texas to breed cattle and then sell the young stock to northern ranchmen to be matured. Texas raises a greater number of calves to a given number of cows than any other State north of it, and our young cattle make larger and better beef by being grown on northern ranges. Our climate, warm at nearly all seasons of the year, is especially adapted to breeding purposes, and after a calf is twelve months old or over, it is then able to stand the colder climate of the North, and in a year or two mature into a beef steer, weighing more than the same animal grown here.

To describe the drive, and how Texas cattle are handled, would be almost impossible, unless you knew something of range work.

We commence in the early spring with mounted men to drive the cattle on a certain range to a pen, where we turn out all not needed for driving purposes (most ranges have several pens). Those to be driven are kept under herd until, after repeating the same operation over all parts of the range and putting all the bunches together, a herd is formed; it sometimes takes many ranches or ranges to furnish a herd large enough to drive north, though there are a large number of ranches able to furnish several herds each. A herd generally consists of twenty-five hundred to three thousand head of cattle. After enough cattle are bunched together to form a herd, a boss man, with eight hands, a wagon for hauling provisions, and a cook, who is also the driver of the wagon, with not less than four horses to each man, starts to go to the trail, taking the nearest route on which there is grass and water, from the point at which the cattle are started to the nearest point on the trail; the cattle are driven slowly, allowing time for grazing and watering, and at night are stopped, and will generally lie down about dark in a space of about 2 acres; the drivers ride around them all night, taking watches just like sentinels around a camp. Our main trail commences at Bandera, the county seat of the county of the same name, runs in a northerly direction to Fort Griffin, thence to Doan's store, on Red River, where it is proposed the national trail shall commence, thence to Dodge City, Kans., thence to Ogalalla, Nebr., where the trails divide, going in all directions northward, west, or east, to points where the cattle are to be delivered to northern buyers. Cattle are driven about 15 miles per day, and some herds, for delivery in Montana, are on the trail ninety days, and even more.

The comptroller of the State certifies that taxes have been paid to the 15th November, 1884, on 6,517,524 head. Value, $81,052,616.

I would say there are in the State not less than 7,000,000 cattle, value $105,000,000. I send comptroller's report. There are many ranges in the extreme western part of the State, reaching from the mouth of Devil's River west to El Paso, on the Rio Grande, and north to the extreme northern part of the Panhandle, so large that it would be impossible to make a close estimate of the number of cattle on them.

The following certificates of the comptroller of Texas show the number and valuation of cattle, horses, sheep, and hogs assessed for taxation in that State for the years 1883 and 1884:

(Executive department, office of comptroller, Austin, Tex.)

I, William J. Swain, comptroller of public accounts of the State of Texas, do hereby certify that the assessment rolls for the year 1884 on file in this office show the num-

bers of cattle, horses, sheep, and hogs assessed for taxation for said year to be as follows:

Animals.	Number.	Value.
Cattle	6,517,524	$81,052,616
Horses	1,154,090	32,109,577
Sheep	4,691,008	9,291,899
Hogs	1,403,570	2,137,978

In testimony whereof I hereunto sign my name and cause the seal of this office to be affixed this the 15th day of November, A. D. 1884.

WM. J. SWAIN, *Comptroller.*

(Executive department, office of comptroller, Austin, Tex.)

I, Wiliam J. Swain, comptroller of public accounts of the State of Texas, do hereby certify that the assessment rolls for the year 1883 on file in this office show the numbers of cattle, horses, sheep, and hogs assessed for taxation for said year to be as follows:

Animals.	Number.	Value.
Cattle	6,054,488	$71,393,319
Horses	1,054,452	27,678,508
Sheep	4,491,600	9,228,234
Hogs	1,044,762	1,673,298

In testimony whereof I hereunto sign my name and cause the seal of this office to be affixed this the 29th day of September, A. D. 1884.

WM. J. SWAIN, *Comptroller.*

APPENDIX No. 6.

LETTER ADDRESSED TO THE CHIEF OF THE BUREAU OF STATISTICS BY PROF. ELIAS LOOMIS, LL. D. OF YALE COLLEGE, IN REGARD TO THE PRINCIPAL SOURCES OF THE RAINFALL OF DIFFERENT SECTIONS OF THE UNITED STATES.

YALE COLLEGE, *February* 23, 1885.

DEAR SIR: In reply to your letter of the 14th ultimo I have to state that there is no doubt that the westerly winds which blow over the Rocky Mountains are very dry winds when they reach the eastern slope of those mountains; and they appear to have lost a very considerable part of their moisture by the precipitation which took place on the western slope of the Sierra Nevadas. I have examined this subject in a paper published in the American Journal of Science for July, 1881, and I herewith send you a copy of this paper. As the result of this dryness, the mean annual rainfall between the Sierra Nevadas and the meridian of 100 degrees is, with slight exceptions, less than 15 inches. This is shown by the latest rain-charts published by the Smithsonian Institution.

Throughout all the southern part of the United States east of the Rocky Mountains, with the exception of the Atlantic coast, a considerable part of the rainfall is evidently due to vapor which comes from the Gulf of Mexico. This influence is very decided up to the parallel of 36 degrees, and is probably felt in a diminished degree still further north.

Near the Atlantic coast the amount of rainfall is evidently increased by vapor which comes from the Atlantic Ocean. For the remaining portion of the United States east of the Rocky Mountains, the vapor which furnishes the rain may come to some extent from these two sources, but it is chiefly derived from the chain of the great lakes from the rivers, small lakes, and collections of water, and from the moist earth.

The rainfall in the western portion of the United States within 150 miles of the Pacific Ocean is evidently derived mainly from vapor which rises from the Pacific Ocean. This is indicated by the fact that the precipitation occurs almost wholly on the west side of the ridge of the Sierra Nevadas, and there is but little rainfall on the east side.

I am, with much respect, yours truly,

ELIAS LOOMIS.

APPENDIX No. 7.

LETTER ADDRESSED TO THE CHIEF OF THE BUREAU OF STATISTICS BY MR. SILAS BENT, OF SAINT LOUIS, IN REGARD TO THE METEOROLOGY OF THE GREAT INTERIOR DRY AREA OF THE UNITED STATES.

GRANITE BLOCK, CORNER FOURTH AND MARKET STREETS,
Saint Louis, February 19, 1885.

DEAR SIR: Your favor of 13th instant, together with map showing annual rainfall in the United States, is received, for which I thank you, as well as for your criticism of my address upon the "Meteorology of the Mountains and Plains of North America," &c., in reply to which I have to say that my treatment of the subject, necessarily very brief, did not aim to go farther than to announce the operations of general laws, and to only touch upon such modifications of those laws occasioned by local influences as were absolutely necessary for a fair presentation of the hypothesis.

If the maps you send were made from observations taken equally often all over the United States territory and included the snowfall as well as the rainfall, then it would be almost conclusive against the general theory; but this, I take it, is not the case, and the precipitation of moisture in the form of snow on the tops of the mountains (which from their reservoirs keep in perennial flow all the great rivers of the continent), as well as along what might be termed the water-belts, extending from the mouth of the Columbia River to the mouth of the Saint Lawrence and Kennebec Rivers, is not shown on the map, yet this is a potential factor in the consideration of the subject as a whole.

The rainfall alone, as shown by the map, would not keep the Great Lakes in supply without the addition of the snow that falls into them, and by the map there is no rainfall shown capable of sustaining all the great rivers that radiate from the region of the Yellowstone Park or the "water dome" of the continent. But my main object in discussing these points in the address was to show that if it were not for the mountain ranges running north and south, and therefore, according to my theory, at right angles to the *moisture-laden* winds from the west, the arid plateau and plains of Arizona, Utah, and Nevada and of New Mexico, Colorado, and Wyoming, would be as prolific and luxuriant as the valley of the Columbia River and Manitoba, for if this moisture were brought to these high latitudes of the water belt by a wind from the south, its precipitation would be distributed all along the way over the arid plains of Arizona and Utah and of New Mexico and Colorado, and the sterility of those plains would not exist. Their very sterility, therefore, shows that south winds do not prevail there, and that the west winds that do prevail are robbed of their moisture by the condensing power of the mountain ranges which stand across their path before they can reach these plains.

The map, no doubt, shows correctly the rainfall over the eastern half of our country; but how much of that, so represented, comes from the Gulf of Mexico and Atlantic, and how much from the snows of the northwest converted into rain before it falls cannot be yet determined, though I by no means pretend that by far the greater portion of that rainfall does not come from the Gulf and the Atlantic. But still, if the snowfall upon the western mountains and northern plains could be also as fully and fairly shown as the rainfall is in the eastern half of the country, I think the face of the map would be very materially changed and its relative exhibits correspondingly modified.

I write under a press of disturbing business thoughts, but hope you can understand me, and believe me, very respectfully, yours,

SILAS BENT.

Hon. JOSEPH NIMMO, Jr.,
Chief of Bureau of Statistics, Washington, D. C.

APPENDIX No. 8.

LETTER IN REGARD TO THE PRECIPITATION OF MOISTURE THROUGHOUT THE GREAT DRY AREA OF THE INTERIOR, BY SILAS BENT, ESQ., SAINT LOUIS.

GRANITE BLOCK,
CORNER FOURTH AND MARKET STREETS, *Saint Louis, April* 9, 1885.

DEAR SIR: Your favor of the 17th ultimo, with papers from the Signal Bureau, I found awaiting me on my return home a few days ago. I have not had time to examine the tables, but assuming that your analysis of them is correct, and that they "show that the average precipitation during the summer months throughout the dry area east of the Rocky Mountain range is considerably greater than during the winter months," and that "in Idaho and Washington Territories the reverse, however, appears to be the case," it would, of course, be desirable with me to harmonize these facts with the theory advanced in my recent paper upon the meteorology of the mountains and plains of North America. This, however, I am not sure I can fully do, for I have great doubts as to the *whole* truth being told by these tables. The *rain-gauges* used by the weather bureau are accurate enough for all practical purposes, and no doubt show correctly the precipitation that takes place in that form at the localities where they are used, but the *snow-gauges* are quite inadequate to show the amount of precipitation of moisture that reaches the earth's surface in the form of snow, or the point at which the congealation of vapor into snow has occurred. Tables or maps, therefore, made from such records give but a one-sided view of the subject, and this is the difficulty that stands in the way of any examination of the meteorological problem where the annual precipitation is divided into rainfall and snowfall, as is the case throughout the dry area east of the Rocky Mountain range. But, on the Pacific coast and western slope of the Sierra Nevada range, below the snow limit, where the precipitation is almost altogether as rain, it is not difficult to show why that precipitation should be much greater in winter than in summer, as I shall now proceed to do.

The ocean temperature of the North Pacific remains pretty much the same throughout the year, and is, as I have before said, about 70° or 75° F. The temperature of the land, however, along the coast of Oregon and Washington Territory and the lower regions of Idaho is much higher than that of the ocean in the summer time, and much lower in the winter season. The vapor-laden west winds, which come to those coasts from across the Pacific, partake of the temperature of the ocean, and being cooler than the land in summer, are expanded by the contact rather than contracted, and, of course, yield no precipitation, but in the winter, being warmer than the land, they are contracted by the contact, and give forth the mists and rain which envelop that region throughout that season, and which mists and rain are congealed into snow only when those winds reach the mountains where the temperature is below the freezing point.

The equable character of the climate on that coast, caused by these west winds, is shown by the fact that thunder-storms and tornadoes are almost unknown there, these phenomena being caused by the meeting of currents in the atmosphere of different temperatures, as described in extreme cases in the article upon the "Birth of the Tornado," which I sent you a short time since.

From information derived from residents along the foot-hills of the eastern slope of the Rocky Mountains, who are familar with the weather of the plains or dry area of that region, I am of the opinion that by far the greater amount of precipitation upon those plains is in the form of snow, which falls in the winter, and which, if it could be measured, would reverse the showing of these tables from the weather bureau.

This, however, can be only definitely settled when the appliances for snowfall measurement can be made more accurate than any yet devised.

With many thanks for the interest and trouble you bestow upon this matter, and with the hope that it may lead to profitable investigation in the interest of science, I am, very sincerely yours,

SILAS BENT.

Hon. JOSEPH NIMMO, Jr.,
Chief of Bureau of Statistics, Treasury Department, Washington, D. C.

APPENDIX No. 9.

LETTER ADDRESSED TO THE CHIEF OF THE BUREAU OF STATISTICS, IN REGARD TO THE SOURCES OF PRECIPITATION THROUGHOUT THE DRY AREA, BY CAPT. SAMUEL M. MILLS, ACTING CHIEF SIGNAL OFFICER UNITED STATES ARMY.

SIGNAL OFFICE, WAR DEPARTMENT,
Washington City, March 6, 1885.

SIR: Referring to your letter of the 13th ultimo, in which you state that in the preparation of a report in regard to the range and ranch cattle area of the United States, you desire to describe the dry area of this country, and for that purpose submit certain inquiries to obtain information on the subject, I have the honor to say that your questions relate to general theories which are not easily discussed in a few words.

It seems probable that evaporation from the Kuro-Siwo is no more important than that from the remainder of the Pacific Ocean.

The southwest wind that, north of California, passes over the Rocky Mountains, and deposits rain on our Pacific coast, undoubtedly draws most of its moisture from the Pacific Ocean; it loses more of its moisture on the immediate coast than in the neighborhood of the crest of the Rocky Mountains, but is by no means depleted; on the average its dew-point falls about 15 degrees Fahrenheit before reaching the crest. This corresponds to a loss of about 40 per cent. of its moisture. Having passed the crest it does not furnish any more rain until its 60 per cent. residuum has been increased either by local evaporation or by mixing with moist air from some distant source, such as the Atlantic, Gulf of Mexico, Great Lakes, &c.

As any rainfall immediately begins to evaporate, and mixes with what is already in the air, it is impracticable to state what proportion of the rainfall over the Great Lakes or over any other section comes directly from the Gulf of Mexico and Caribbean Sea.

I am, very respectfully, your obedient servant,

S. M. MILLS,
Captain Fifth Artillery, Acting Chief Signal Officer U. S. Army.

Mr. JOSEPH NIMMO, Jr.,
Chief Bureau of Statistics, Treasury Department.

APPENDIX No. 10.

TABLES SHOWING THE MONTHLY PRECIPITATION AT VARIOUS POINTS THROUGHOUT THE DRY AREA, FURNISHED BY CAPT. SAMUEL M. MILLS, U. S. ARMY, ACTING CHIEF SIGNAL OFFICER.

SIGNAL OFFICE, WAR DEPARTMENT.
Washington City, March 13, 1885.

SIR: In reply to your letter of the 7th instant, requesting a statement of the precipitation at the points indicated therein, I have the honor to inclose herewith an extract from the records of this office.

I am, very respectfully, your obedient servant,

S. M. MILLS,
Captain Fifth Artillery, Acting Chief Signal Officer U. S. Army.

Mr. JOSEPH NIMMO, Jr.,
Chief Bureau of Statistics, Treasury Department.

Precipitation (in inches and hundredths) at various points, from the records of the Signal Office.

BOISE CITY, IDAHO.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual amount.
1877	.....	.....	.....	....	.....	.....	0.35	0.09	0.27	0.85	2.05	0.01	....
1878	1.73	2.18	1.63	0.37	1.18	0.86	0.31	0.50	0.27	0.30	0.53	0.35	10.21
1879	3.62	1.42	3.04	1.42	0.92	1.43	(*)	0.03	0.14	0.76	1.20	3.65	17.63
1880	0.90	0.94	0.50	1.50	1.57	0.11	0.02	0.02	0.11	0.50	0.48	4.01	10.66
1881	3.62	3.51	0.64	1.34	0.07	0.29	0.13	0.00	0.25	2.12	0.94	0.65	13.56
1882	1.62	1.73	1.54	2.33	0.34	0.29	(*)	0.00	1.36	2.94	0.08	2.20	14.43
1883	3.77	1.20	0.28	0.61	2.12	0.20	(†)	(*)	0.20	4.06	0.46	2.27	.....
1884	1.75	1.32	2.78	0.78	0.92	3.41	0.60	0.07	2.11	1.52	0.12	5.67	21.05
Mean	2.43	1.76	1.49	1.19	1.02	0.94	0.20	0.09	0.59	1.63	0.73	2.35	14.59

* Inappreciable. † No record.

CHEYENNE, WYO.

1870	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.41	0.18	.....
1871	0.28	0.07	0.11	0.95	2.14	2.25	1.27	0.36	0.74	0.24	0.66	0.16	9.23
1872	0.02	0.27	0.38	1.61	1.99	1.84	3.90	2.05	1.03	0.33	0.03	0.63	13.48
1873	0.03	0.02	0.38	0.92	2.41	1.77	1.10	2.07	0.36	0.70	0.17	0.08	10.01
1874	0.11	0.11	0.74	0.61	1.50	1.34	1.87	0.44	0.93	1.86	0.04	0.16	9.71
1875	0.42	0.00	0.23	0.50	1.20	0.29	4.47	2.12	1.34	0.60	0.84	0.03	12.10
1876	0.02	0.00	0.54	0.23	2.50	0.10	0.79	0.26	0.00	0.00	0.32	0.21	5.03
1877	0.20	0.14	0.98	1.11	2.24	1.27	0.43	0.83	2.02	1.99	0.17	0.33	11.71
1878	0.08	0.13	1.16	0.19	4.46	1.71	1.43	2.50	0.75	0.04	0.00	0.19	12.64
1879	0.32	0.20	0.44	1.66	1.30	0.07	1.04	1.26	0.00	0.65	0.23	0.17	7.34
1880	0.20	0.09	0.00	0.17	0.44	1.06	1.88	2.23	1.05	0.76	0.36	0.08	8.58
1881	0.36	0.22	0.32	2.32	1.14	1.22	1.40	1.97	1.75	0.88	0.29	0.01	11.88
1882	0.14	0.05	0.06	0.46	2.73	1.85	2.30	0.23	0.35	0.31	0.06	0.10	8.64
1883	0.88	0.25	0.85	2.76	3.68	3.67	1.45	2.18	0.90	1.06	0.16	0.80	19.24
1884	0.76	0.26	1.59	1.33	4.83	1.50	0.60	2.07	1.25	0.50	0.18	0.67	15.54
Mean	6.27	0.14	0.56	1.06	2.33	1.42	1.71	1.47	0.89	0.75	0.26	0.21	11.07

Precipitation (in inches and hundredths) at various places, &c.—Continued.

DAYTON, WASH.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual amount.
1879	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.55	.....
1880	3.37	2.19	1.89	3.81	2.78	1.00	1.68	1.29	0.19	1.65	2.00	7.93	29.78
1881	5.03	5.04	1.84	3.51	0.45	1.61	0.65	0.22	1.47	3.04	2.47	2.37	27.70
1882	2.56	6.16	1.97	4.08	1.93	0.77	0.83	0.14	0.94	4.41	2.61	7.12	33.52
1883	5.48	1.17	2.44	1.64	2.90	0.08	0.00	0.30	0.09	1.44	3.11	2.79	21.44
1884	3.14	5.66	1.79	2.40	0.81	2.02	0.32	0.09	1.40	3.45	0.25	5.10	26.43
Mean	3.92	4.04	1.99	3.09	1.77	1.10	0.70	0.41	0.82	2.80	2.09	4.98	27.75

DEADWOOD, DAK.

1878	0.30	1.01	3.85	8.77	7.80	.....	.....	.....	.....	.....	0.75	3.63	.....
1879	0.58	0.72	0.51	7.69	5.03	4.67	1.82	1.49	0.32	4.26	0.27	1.14	28.50
1880	0.56	1.14	0.75	1.57	2.43	3.33	1.51	3.33	0.30	1.27	2.37	0.64	19.20
1881	3.10	1.26	2.59	2.05	3.70	3.04	1.56	0.56	1.80	0.58	0.84	0.05	21.13
1882	0.33	0.21	1.29	7.31	7.05	5.78	4.81	1.97	0.28	0.88	1.35	2.57	33.83
1883	0.74	1.32	0.84	5.69	10.33	5.26	1.82	1.32	0.11	0.80	0.45	1.01	29.69
1884	0.85	1.01	2.61	2.29	1.72	2.51	3.51	3.07	1.99	1.48	1.46	1.79	24.29
Mean	0.92	0.95	1.78	5.05	5.44	4.10	2.50	1.96	0.80	1.54	1.07	1.55	26.11

DENVER, COLO.

1871	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.51	.....
1872	0.55	0.22	1.71	2.09	3.74	2.07	2.69	1.75	1.57	0.68	0.69	0.29	18.05
1873	0.13	0.24	0.22	2.43	0.75	2.24	2.00	1.41	0.89	0.73	0.16	0.61	11.81
1874	0.84	0.53	0.49	1.70	2.43	1.21	3.35	0.68	1.34	0.64	0.08	0.17	13.46
1875	0.38	0.60	0.39	2.24	1.94	0.43	4.32	1.97	2.89	0.22	1.28	0.59	17.25
1876	0.21	0.11	1.80	1.23	8.57	1.10	1.16	2.03	0.60	0.12	1.50	1.70	20.12
1877	1.90	0.40	1.40	2.77	2.30	1.93	0.33	1.30	0.38	2.15	0.73	0.79	16.38
1878	0.10	0.48	1.82	0.05	2.90	2.78	1.38	2.25	1.23	0.80	0.67	1.05	15.51
1879	0.40	0.39	1.00	2.62	3.36	0.32	0.64	1.38	0.02	0.19	0.21	0.33	10.86
1880	0.38	0.32	0.21	0.31	1.11	1.22	1.38	1.46	0.89	1.37	0.83	0.10	9.58
1881	0.49	1.22	0.87	0.50	2.21	0.09	2.50	2.33	0.57	0.32	1.68	0.00	12.78
1882	0.57	0.20	0.20	1.47	2.98	4.96	0.66	1.20	0.06	0.75	0.71	0.73	14.49
1883	2.35	0.45	0.21	3.10	4.30	0.85	2.27	0.75	1.08	1.49	0.32	2.32	19.49
1884	0.22	0.86	0.93	3.33	4.61	1.47	0.65	1.71	0.13	0.21	0.19	0.76	14.98
Mean	0.66	0.46	0.87	1.83	3.17	1.59	1.79	1.56	0.90	0.74	0.70	0.71	14.98

DODGE CITY, KANS.

1874	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.22	0.23	0.05	.....
1875	0.12	0.10	0.04	0.72	2.26	0.73	3.28	2.06	1.32	0.06	0.00	0.09	10.78
1876	0.00	0.05	3.50	0.16	1.15	2.53	2.26	1.03	2.13	1.00	1.35	0.15	15.40
1877	0.18	0.56	0.25	3.38	4.96	3.92	1.79	4.09	0.50	3.34	0.56	4.36	27.89
1878	0.21	1.18	1.01	1.06	4.63	2.19	1.61	4.48	0.76	0.09	0.60	0.19	17.96
1879	0.87	0.08	0.17	0.40	0.90	4.40	3.90	3.75	0.80	(*)	0.04	0.12	15.43
1880	(*)	(*)	0.04	0.11	3.01	1.59	4.00	5.17	0.32	1.42	2.43	0.03	18.12
1881	0.15	1.63	0.50	2.38	12.62	1.77	5.06	2.36	3.13	2.19	0.95	0.61	33.55
1882	0.52	0.22	0.24	0.68	3.87	1.51	3.04	1.07	0.15	1.62	0.11	0.11	13.14
1883	0.44	1.42	0.42	2.40	5.41	4.31	2.61	5.66	1.32	3.32	0.12	1.07	28.50
1884	0.08	0.28	1.91	1.07	4.47	7.67	6.40	4.82	0.23	1.50	0.83	1.10	30.36
Mean	0.26	0.55	0.82	1.24	4.35	3.06	3.40	3.45	1.07	1.34	0.66	0.72	21.11

* Inappreciable.

EAGLE ROCK, IDAHO.

1880	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.50	.....
1881	3.66	5.14	0.97	3.13	0.74	1.09	1.21	0.95	0.00	1.71	1.91	0.80	21.31
1882	4.41	1.25	3.45	3.35	0.30	0.52	0.30	0.07	1.17	1.50	0.49	1.24	18.05
1883	2.08	2.38	0.41	0.76	1.12	(*)	.....	.....	.....	.....	.....	.....	.....
Mean	3.38	2.92	1.61	2.41	0.72	0.80	0.76	0.51	0.58	1.60	1.20	2.18	19.68

* Station closed June 15, 1883.

Precipitation (in inches and hundredths) at various points, &c.—Continued.

EL PASO, TEX.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual amount.
1878	.....	.....	.....	.....	.....	.....	1.25	2.55	0.66	1.02	0.66	0.11	.....
1879	1.57	0.83	0.18	0.07	0.00	0.08	2.47	0.35	0.04	0.95	0.01	0.26	6.81
1880	1.01	(*)	0.30	0.10	0.00	0.00	6.54	3.60	0.80	0.47	0.02	1.53	14.27
1881	0.35	0.24	0.01	0.22	1.83	0.02	8.18	3.15	1.44	1.45	0.50	0.78	18.17
1882	0.64	0.78	0.38	0.00	0.10	0.43	1.26	2.82	0.40	0.00	1.46	0.00	8.27
1883	0.10	0.40	2.09	0.10	0.02	0.04	2.84	1.34	2.51	2.03	0.61	0.84	12.93
1884	0.55	0.84	0.33	0.91	(*)	0.11	0.46	3.98	3.68	5.15	0.22	2.07	18.30
Mean	0.70	0.52	0.55	0.23	0.32	0.11	3.29	2.54	1.36	1.58	0.50	0.80	13.14

* Inappreciable.

FORT BENTON, MONT.

1871	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.30	.....
1872	0.27	0.34	0.82	0.67	0.64	1.14	4.62	0.61	1.82	0.19	0.61	0.59	12.33
1873	0.60	0.65	0.23	1.14	3.03	1.67	1.29	1.59	0.58	0.19	0.86	0.12	11.95
1874	0.67	0.10	0.64	0.43	2.98	2.13	0.10	1.17	0.49	0.56	0.58	0.60	10.45
1875	0.66	1.11	0.22	1.04	1.60	2.57	2.24	1.19	0.13	0.71	0.85	0.43	12.75
1876	0.71	0.28	1.53	1.25	11.06	1.45	2.31	.....	.....	.....	.....	.....	.....
1880	.....	.....	.....	.....	.....	.....	1.12	1.56	0.32	1.09	1.44	1.39	.....
1881	2.27	0.66	0.29	0.18	1.43	3.46	2.28	1.18	1.32	1.94	1.73	0.07	16.81
1882	0.75	0.38	1.09	1.22	0.35	0.13	0.85	0.27	2.89	0.86	0.39	1.00	10.18
1883	0.75	0.45	1.34	1.02	3.31	1.93	0.16	1.01	0.93	1.64	0.36	0.11	13.01
1884	0.56	(*)	(*)	(*)	1.09	2.18	3.09	0.79	1.44	0.36	0.29	1.01	.....
Mean	0.80	0.50	0.77	0.87	2.83	1.85	1.81	1.04	1.10	0.84	0.79	0.66	12.50

* Incomplete.

FORT BUFORD, DAK.

1879	0.02	0.59	0.03	2.75	5.56	3.35	3.63	0.18	0.00	1.55	0.37	1.68	19.71
1880	0.10	0.51	0.21	0.74	4.02	5.46	4.17	2.36	1.04	0.90	0.66	3.06	23.25
1881	1.98	1.10	1.17	1.34	1.00	3.44	1.32	1.10	0.58	0.39	0.39	0.09	13.90
1882	0.26	0.29	0.69	0.94	1.61	1.87	2.25	0.16	2.86	1.00	0.29	0.51	12.73
1883	1.96	0.36	0.91	0.48	0.59	0.97	1.69	1.96	0.22	1.41	0.14	0.11	10.82
1884	0.11	0.12	0.10	1.30	0.14	0.99	1.87	1.06	0.53	0.44	0.31	0.40	7.37
Mean	0.74	0.50	0.52	1.26	2.15	2.68	2.49	1.14	0.87	0.95	0.36	0.98	14.63

FORT CUSTER, MONT.

1879	.....	.....	.....	.....	.....	.....	.....	.....	0.03	2.04	0.18	1.53	.....
1880	0.32	0.60	0.36	1.31	5.63	3.17	2.51	2.55	0.20	1.19	0.54	1.27	19.65
1881	2.84	0.51	0.17	0.78	1.80	1.57	1.41	0.03	1.09	0.80	0.66	0.22	11.88
1882	0.40	0.02	0.07	1.12	4.45	2.43	0.54	0.11	1.28	0.29	0.15	1.19	12.05
1883	0.22	0.09	1.03	1.86	2.96	1.50	0.77	1.01	0.46	0.97	1.10	1.87	13.84
1884	2.85	1.29	1.02	0.77	1.19	3.87	0.80	2.09	1.42	0.66	0.37	0.27	16.60
Mean	1.33	0.50	0.53	1.17	3.21	2.51	1.21	1.16	0.75	0.99	0.50	1.06	14.80

FORT ELLIOTT, TEX.

1879	....	....	....	....	....	....	....	....	....	....	....	0.10	.....
1880	(*)	0.05	0.40	0.16	4.48	4.50	2.11	1.70	0.54	2.40	0.10	0.35	16.79
1881	0.47	0.74	(*)	1.26	5.27	0.10	3.28	0.49	3.18	0.69	0.42	0.26	16.16
1882	0.33	0.16	0.53	0.66	7.48	1.54	5.65	1.55	3.18	2.32	0.96	0.40	24.76
1883	(*)	0.53	0.04	0.82	4.56	1.66	2.87	6.56	4.97	5.32	0.04	0.84	28.21
1884	0.61	0.27	0.34	1.08	6.29	6.86	1.29	5.60	0.84	5.54	2.14	3.05	33.91
Mean	0.28	0.35	0.26	0.80	5.62	2.93	3.04	3.18	2.54	3.25	0.73	0.83	23.97

* Inappreciable.

Precipitation (in inches and hundredths) at various points, &c.—Continued.

FORT KEOGH, MONT.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual amount.
1879	0.26	0.69	0.28	2.20	2.75	5.23	5.90	1.84	0.44	2.47	0.11	0.58	22.75
1880	0.32	0.17	0.51	0.48	3.51	3.05	2.66	2.10	0.07	0.29	0.56	1.12	14.84
1881	2.35	0.36	0.31	0.35	0.76	4.44	0.39	0.93	0.55	0.46	0.44	0.10	11.44
1882	0.18	0.18	0.41	2.06	2.57	1.76	0.58	(*)	1.21	0.62	0.19	0.37	10.13
1883	0.18	0.11	0.39	1.37	2.80	(†)	.....	.....	.....	.....	.....	.....	.....
Mean	0.66	0.30	0.38	1.29	2.48	3.62	2.38	1.22	0.57	0.96	0.32	0.54	14.79

*Inappreciable. †Station closed June 30, 1883.

FORT SILL, IND. T.

1876	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.08	*
1877	0.12	3.06	0.11	0.90	7.24	5.57	4.49	2.50	5.98	6.86	4.65	6.97	48.45
1878	1.91	1.83	0.35	1.85	4.06	8.86	5.13	2.03	1.26	0.71	2.69	3.01	33.69
1879	2.73	0.21	1.47	6.93	2.30	5.97	1.53	2.36	0.47	0.28	0.27	0.55	25.07
1880	0.58	0.59	3.03	1.58	9.74	5.76	5.57	3.96	1.17	0.54	0.60	0.63	33.75
1881	1.92	3.45	1.28	2.63	6.04	0.21	1.97	0.84	4.46	1.74	1.38	2.30	28.22
1882	0.80	1.66	1.53	1.61	4.40	3.25	4.66	3.30	4.71	2.87	2.01	0.33	31.13
1883	0.26	2.27	1.68	1.55	1.46	5.55	2.30	.....	1.44	.....	.....	.....	.....
1884	.....	.....	.....	.....	.....	.....	0.23	1.21	2.24	.....	.....	.....	.....
Mean	1.18	1.87	1.35	2.44	5.03	5.02	3.24	2.31	2.72	2.17	1.93	2.12	33.38

FORT WASHAKIE, WYO.

1882	.....	.....	0.15	1.80	5.77	1.51	0.57	0.25	0.46	0.85	0.69	0.52	.....
1883	0.83	0.65	0.35	3.32	3.57	(*)	.....	.....	.....	.....	.....	.....	.....
Mean	0.83	0.65	0.25	2.56	4.67	1.51	0.57	0.25	0.46	0.85	0.69	0.52	.....

*Station closed June 15, 1883.

LEWISTON, IDAHO.

1880	0.33	0.20	0.29	0.59	1.59	1.07	1.87	1.09	0.20	1.54	2.33	6.31	17.41
1881	4.46	4.33	0.49	2.60	0.23	2.30	0.89	0.31	1.17	1.52	1.19	1.07	20.56
1882	1.46	0.78	0.67	0.80	0.65	0.36	0.29	0.06	0.69	2.83	1.27	4.88	14.74
1883	3.56	0.82	3.21	1.12	2.01	0.01	(*)	(*)	0.04	1.84	1.86	1.36	15.83
1884	2.15	3.10	1.25	1.45	0.50	5.66	1.30	0.06	1.01	2.08	0.36	2.79	21.71
Mean	2.39	1.85	1.18	1.31	1.00	1.88	0.87	0.30	0.62	1.96	1.40	3.28	17.85

*Inappreciable.

NORTH PLATTE, NEBR.

1874	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.46	0.57	0.34	.....
1875	0.24	0.26	0.40	6.21	1.69	1.62	2.12	0.66	1.40	0.14	0.52	0.09	15.35
1876	0.09	0.13	0.49	0.51	2.97	0.49	1.16	2.46	1.47	1.07	0.49	0.51	11.84
1877	1.38	0.37	0.19	0.37	3.22	2.99	2.04	5.03	4.49	1.23	0.30	3.86	25.47
1878	0.00	0.18	1.40	1.15	3.24	5.85	3.58	1.52	0.91	0.13	0.46	0.20	18.62
1879	2.33	0.43	0.11	1.92	2.25	3.31	8.47	0.16	0.40	0.21	0.10	0.37	20.06
1880	0.03	0.03	0.18	0.16	2.28	3.12	2.87	3.96	1.53	2.72	0.23	0.37	17.48
1881	0.16	0.76	1.26	0.87	4.84	6.12	3.09	0.75	2.36	2.22	0.37	0.13	22.93
1882	0.46	0.13	0.04	1.94	3.98	4.84	2.65	1.68	0.28	1.23	0.01	0.71	17.96
1883	1.20	1.38	0.47	3.11	4.07	7.49	1.38	4.51	1.08	3.47	0.42	1.43	30.01
1884	0.10	0.23	1.82	2.14	2.40	1.39	2.19	2.13	0.08	0.74	0.04	0.27	13.53
Mean	0.60	0.39	0.64	1.84	3.09	3.72	2.96	2.29	1.40	1.33	0.32	0.75	19.32

Precipitation (in inches and hundredths) at various points, &c.—Continued.

SANTA FÉ, N. MEX.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual amount.
1871	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.00	0.00	.....
1872	0.34	0.20	0.13	0.14	0.45	2.44	2.63	2.98	0.27	0.25	0.01	0.04	9.87
1873	0.55	0.40	0.15	0.26	0.33	1.72	1.02	2.79	1.23	0.07	0.38	0.83	9.73
1874	1.39	1.60	1.51	1.71	0.70	0.54	3.92	1.73	1.52	2.47	0.58	2.26	19.93
1875	0.67	0.72	1.37	0.33	0.88	0.83	6.91	1.57	4.14	0.06	1.50	0.47	18.97
1876	0.61	0.40	0.64	0.46	0.83	1.62	5.43	2.13	0.85	0.75	0.97	0.38	15.07
1877	0.18	1.08	0.14	1.83	0.92	0.13	3.54	1.72	0.96	1.32	0.70	0.63	13.15
1878	0.21	0.89	0.73	0.22	1.01	3.18	3.20	5.12	1.03	0.00	3.15	0.78	19.52
1879	0.77	2.23	0.15	0.48	0.37	0.51	2.34	2.30	1.07	1.38	1.34	0.50	11.44
1880	0.28	0.94	0.15	0.05	0.52	0.65	2.69	1.79	1.13	0.75	0.28	0.66	9.89
1881	0.38	0.22	0.57	0.98	2.31	0.08	4.72	6.28	0.91	4.19	1.11	(*)	.....
1882	0.47	0.06	0.23	0.26	1.06	1.36	1.17	4.69	0.62	.....	0.90	0.55	11.37
1883	0.42	0.96	0.40	0.11	0.87	(†)	.....	.....	.....	.....	.....	.....	.....
1884	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	‡1.77	.....
Mean	0.52	0.64	0.51	0.57	0.85	1.14	3.41	3.01	1.25	1.02	0.91	0.74	13.89

* No record. † Station closed June 15, 1883. ‡ Station reopened December 1, 1884.

SILVER CITY, N. MEX.

1878	.....	.....	.....	.....	0.00	0.05	3.92	7.70	0.27	(*)	3.81	0.77	.....
1879	2.78	1.12	0.32	0.01	0.00	0.08	1.87	3.85	2.41	1.06	0.28	0.49	13.77
1880	0.79	0.85	0.58	0.30	0.00	0.99	3.05	3.51	3.57	1.66	0.00	1.65	16.99
1881	0.02	0.73	0.91	0.48	1.01	0.43	9.62	8.69	3.89	3.21	1.55	0.28	30.82
1882	1.83	2.06	1.17	0.08	1.37	1.92	1.84	6.00	1.05	0.00	1.37	0.58	19.27
1883	1.68	0.63	1.57	(†)	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean	1.42	1.08	0.90	0.22	0.48	0.69	3.96	5.95	2.24	1.19	1.40	0.75	20.19

* Inappreciable. † Station closed March 31, 1883.

SPOKANE FALLS, WASH.

1881	.....	3.85	1.07	1.20	0.50	1.23	2.25	0.45	2.55	2.41	2.23	2.44	.....
1882	4.54	2.25	1.04	2.84	1.54	1.17	0.88	0.14	0.80	4.81	2.44	3.54	25.99
1883	2.13	2.95	0.75	1.93	2.11	0.60	0.00	0.15	0.08	1.48	1.96	0.21	14.37
1884	1.79	3.04	1.54	1.33	0.56	2.58	1.06	0.54	2.43	1.82	0.59	3.28	20.56
Mean.....	2.82	3.02	1.10	1.82	1.18	1.40	1.05	0.32	1.46	2.63	1.81	2.37	20.31

UMATILLA, OREG.

1877	.....	.....	.....	.....	.....	.....	.....	0.02	0.59	0.68	1.92	0.64	.....
1878	1.14	1.26	1.72	0.01	0.36	0.02	0.32	0.15	1.14	0.56	0.72	0.36	7.76
1879	0.95	1.81	1.80	1.49	1.96	0.28	0.21	0.03	0.83	0.33	0.61	0.78	10.58
1880	0.56	0.54	0.35	0.97	0.57	0.38	0.48	1.14	0.18	0.35	0.54	3.65	9.71
1881	2.45	1.92	0.44	0.89	0.06	0.96	0.53	0.73	0.74	1.54	0.98	0.45	11.69
1882	0.71	0.73	0.32	0.76	0.26	0.17	0.04	0.00	1.20	1.79	0.81	1.96	8.75
1883	2.56	0.57	1.20	(*)	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean.....	1.40	1.14	0.89	0.82	0.64	0.36	0.32	0.34	0.78	0.88	0.93	1.31	9.70

* Station closed March 31, 1883.

WEST LAS ANIMAS, COLO.

1882	(*)	0.02	0.10	0.98	5.06	2.49	1.69	1.89	(†)	0.25	0.01	0.08	.....
1883	0.14	0.52	0.15	0.93	1.50	2.63	0.67	0.65	1.35	0.69	0.21	1.68	11.12
1884	0.26	0.50	1.19	1.05	4.46	2.79	1.75	2.17	0.06	0.43	0.32	0.72	15.70
Mean.....	0.20	0.35	0.48	0.99	3.67	2.64	1.37	1.57	0.47	0.46	0.18	0.83	13.41

* Incomplete. † Inappreciable.

SIGNAL OFFICE, WAR DEPARTMENT,
Washington, March 11, 1885.

APPENDIX No. 11.

STATEMENTS IN REGARD TO THE AVERAGE ANNUAL RAINFALL OF DIFFERENT SECTIONS OF THE UNITED STATES.

(Prepared by the Chief Signal Officer of the United States Army.)

SIGNAL OFFICE, WAR DEPARTMENT,
Washington City, February 16, 1885.

SIR: Referring to your letter of the 9th instant, requesting certain meteorological data, I have the honor to inclose herewith an extract from the records of this office.

I am, very respectfully, your obedient servant,

W. B. HAZEN,
Brig. and Brt. Maj. Genl., Chief Signal Officer U. S. A.

Mr. JOSEPH NIMMO, Jr.,
Chief Bureau of Statistics, Treasury Department, Washington, D. C.

Average annual rainfall of different sections of the United States.

Location.	Rainfall.
	Inches.
NEW ENGLAND.	
Eastport, Me	49.02
Portland, Me	38.67
Mount Washington, N. H.	83.86
Boston, Mass	48.21
Block Island, R. I	52.26
New Haven, Conn	50.99
New London, Conn	47.75
MIDDLE ATLANTIC STATES.	
Albany, N. Y	38.05
New York City, N. Y.	42.68
Philadelphia, Pa	41.22
Atlantic City, N. J.	42.18
Barnegat City, N. J	51.74
Cape May, N. J	47.63
Sandy Hook, N. J.	51.26
Delaware Breakwater, Del	31.76
Baltimore, Md	41.98
Washington, D. C	43.30
Cape Henry, Va	57.82
Chincoteague, Va	37.60
Lynchburg, Va	41.34
Norfolk, Va	52.13
SOUTH ATLANTIC STATES.	
Charlotte, N. C	51.24
Hatteras, N. C	75.44
Kitty Hawk, N. C	64.90
Macon, Fort, N. C	63.81
Smithville, N. C	52.86
Wilmington, N. C	57.42
Charleston, S. C	59.89
Augusta, Ga	49.91
Savannah, Ga	52.86
Jacksonville, Fla	55.33

Location.	Rainfall.
	Inches.
FLORIDA PENINSULA.	
Cedar Keys, Fla	58.95
Key West, Fla	40.66
Sanford, Fla	44.61
Punta Rasa, Fla	42.61
EASTERN GULF STATES.	
Atlanta, Ga	56.91
Pensacola, Fla	70.22
Mobile, Ala	65.84
Montgomery, Ala	53.68
Vicksburg, Miss	60.44
New Orleans, La	64.69
WESTERN GULF STATES.	
Shreveport, La	54.11
Fort Smith, Ark	46.65
Little Rock, Ark	57.64
Galveston, Tex	51.43
Indianola, Tex	38.22
Palestine, Tex	43.49
RIO GRANDE VALLEY.	
Brownsville, Tex	32.02
Rio Grande City, Tex	25.12
OHIO VALLEY AND TENNESSEE.	
Chattanooga, Tenn	59.42
Knoxville, Tenn	53.20
Memphis, Tenn	55.38
Nashville, Tenn	53.68
Louisville, Ky	48.83
Greencastle, Ind	

Average annual rainfall of different sections of the United States—Continued.

Location.	Rainfall.
	Inches.
OHIO VALLEY AND TENNESSEE—Cont'd.	
Indianapolis, Ind	47.59
Cincinnati, Ohio	44.09
Columbus, Ohio	44.62
Pittsburgh, Pa	37.04
LOWER LAKES.	
Buffalo, N. Y	37.0[illegible]
Oswego, N. Y	36.05
Rochester, N. Y	37.23
Erie, Pa	42.39
Cleveland, Ohio	38.40
Sandusky, Ohio	41.78
Toledo, Ohio	33.07
Detroit, Mich	35.27
UPPER LAKES.	
Alpena, Mich	38.21
Escanaba, Mich	35.30
Grand Haven, Mich	39.17
Mackinaw City, Mich	38.97
Marquette, Mich	32.68
Port Huron, Mich	35.26
Chicago, Ill	37.57
Milwaukee, Wis	33.87
Duluth, Minn	33.87
UPPER MISSISSIPPI VALLEY.	
Saint Paul, Minn	29.83
La Crosse, Wis	34.26
Davenport, Iowa	35.96
Des Moines, Iowa	42.72
Dubuque, Iowa	39.41
Keokuk, Iowa	38.57
Cairo, Ill	46.33
Springfield, Ill	48.61
Saint Louis, Mo	37.88
MISSOURI VALLEY.	
Lamar, Mo	.....
Leavenworth, Kans	38.27
Omaha, Nebr	36.45
Bennett, Fort, Dak	18.17
Huron, Dak	25.68
Yankton, Dak	28.21
EXTREME NORTHWEST.	
Moorhead, Minn	29.48
Saint Vincent, Minn	18.62
Bismarck, Dak	21.27
Buford, Fort, Dak	16.08
Totten, Fort, Dak	17.36
NORTHERN SLOPE.	
Assinaboine, Fort, Mont	13.93
Benton, Fort, Mont	12.50
Custer, Fort, Mont	14.36
Helena, Mont	15.13

Location.	Rainfall.
	Inches.
NORTHERN SLOPE—Continued.	
Maginnis, Fort, Mont	13.2[illegible]
Poplar River, Mont	8.2[illegible]
Shaw, Fort, Mont	13.8[illegible]
Deadwood, Dak	26.4[illegible]
Cheyenne, Wyo	16.7[illegible]
North Platte, Nebr	19.9[illegible]
MIDDLE SLOPE.	
Denver, Colo	14.98
Pike's Peak, Colo	31.00
West Las Animas, Colo	13.41
Dodge City, Kans	20.00
Elliott, Fort, Tex	21.48
SOUTHERN SLOPE.	
Sill, Fort, Ind. T	33.38
Concho, Fort, Tex	29.18
Davis, Fort, Tex	18.83
Stockton, Fort, Tex	19.43
SOUTHERN PLATEAU.	
Santa Fé, N. Mex	13.89
El Paso, Tex	12.11
Apache, Fort, Ariz	22.75
Grant, Fort, Ariz	15.71
Prescott, Ariz	14.51
Thomas, Camp, Ariz	10.31
Yuma, Ariz	2.04
MIDDLE PLATEAU.	
Winnemucca, Nev	9.62
Salt Lake City, Utah	16.91
Thornburgh, Fort, Utah	.....
NORTHERN PLATEAU.	
Boise City, Idaho	13.30
Lewiston, Idaho	17.85
Dayton, Wash	28.11
Spokane Falls, Wash	20.31
NORTH PACIFIC COAST.	
Canby, Fort, Wash	45.71
Olympia, Wash	50.72
Tatoosh Island, Wash	75.18
Portland, Oreg	54.64
Roseburg, Oreg	35.72
MIDDLE PACIFIC COAST.	
Cape Mendocino, Cal	17.99
Red Bluff, Cal	23.27
Sacramento, Cal	21.68
San Francisco, Cal	22.80
SOUTH PACIFIC COAST.	
Los Angeles, Cal	14.56
San Diego, Cal	9.48

SIGNAL OFFICE, WAR DEPARTMENT.
Washington City, February 14, 1885.

The mean annual and mean monthly rainfall, in inches and hundredths of an inch, as registered at twenty-seven stations in Texas and one in Louisiana, of the United States Army Signal Service, for the periods set opposite the names of the several stations respectively.

[The mean monthly columns embrace each month of the whole time stated for which a record was kept. The mean annual column includes only those years in which registration was made for every month of the year. The small figures placed above each monthly mean indicate the number of years on which computation is made, and those in the annual column the number of full years embraced. It will be observed that all the stations in Texas, except Galveston and Palestine, are situated west of the meridian of longitude 96° 30′ west of Greenwich, and that the record for Palestine is only for eight months of 1882. The record for Shreveport, La., is given as being the station nearest to and as approximately indicating the rainfall throughout the northeastern section of Texas.]

Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Period of registration.	Mean annual rainfall.
Brackettville	5 1.44	5 0.81	5 1.49	5 2.70	6 5.39	6 2.16	6 2.20	6 2.61	6 2.71	5 0.56	5 0.76	5 1.30	May 1, 1877, to October 1, 1882	4 29.12
Brownsville	6 2.59	6 2.19	6 1.55	6 0.82	6 2.68	6 1.16	6 2.48	5 7.76	5 4.89	5 4.29	5 2.06	5 2.16	January 1, 1877, to August 1, 1882	5 33.35
Castroville	5 1.36	5 1.44	5 1.33	4 2.31	4 3.07	4 1.31	4 3.10	5 2.70	5 1.92	5 1.71	5 1.22	5 1.37	August 1, 1877, April 1, 1882	4 22.71
Coleman City	5 1.22	5 1.48	5 1.34	5 1.88	5 3.26	5 3.36	5 4.48	5 2.35	4 4.94	4 2.18	5 1.14	5 2.67	July 1, 1877, to September 1, 1882	3 27.71
Concho	5 1.27	5 0.60	5 0.79	6 1.67	6 2.87	6 2.65	6 3.92	6 4.30	5 4.65	5 1.53	5 1.09	5 1.29	April 1, 1877, to September 1, 1882	4 25.07
Corsicana														39.35
Decatur	5 1.64	5 2.78	6 1.14	6 2.21	6 4.11	6 3.40	6 5.32	6 1.60	5 4.86	4 1.75	5 2.48	5 1.48	March 1, 1877, to September 1, 1882	4 28.63
Denison	7 2.22	7 3.53	7 2.34	7 3.95	7 4.65	7 4.89	8 5.00	8 3.23	7 3.06	7 3.01	7 2.87	7 2.41	July 1, 1875, to September 1, 1882	6 47.92
Eagle Pass	5 1.34	5 1.10	5 1.04	5 1.21	5 4.14	5 2.11	6 3.34	6 3.54	5 4.16	5 2.14	5 0.57	5 1.41	July 1, 1873, to September 1, 1882	4 26.06
El Paso	4 0.89	4 0.46	4 0.22	4 0.10	4 0.48	4 0.13	5 3.94	5 2.49	4 0.73	4 0.97	4 0.30	4 0.67	July 1, 1875, to September 1, 1882	3 13.12
Fort Davis	4 0.81	4 0.25	4 0.20	5 0.33	5 1.73	5 2.46	5 4.43	4 4.98	3 1.82	4 2.88	3 0.40	4 0.40	April 1, 1878, to August 1, 1882	2 22.45
Fort Elliott	3 0.27	3 0.32	3 0.31	3 0.69	3 5.74	3 2.05	3 3.68	3 1.25	2 1.86	2 1.55	2 0.26	2 0.24	February 1, 1880, to September 1, 1882	2 16.47
Fort Griffin	5 1.25	5 1.10	5 0.53	5 2.08	4 3.18	5 4.38	5 3.03	5 1.25	5 2.73	5 2.85	5 2.26	5 1.82	June 1, 1877, to May 1, 1882	4 24.57
Fort McKavett	5 1.13	5 1.30	5 0.60	5 1.33	5 2.77	5 1.84	6 3.18	6 3.15	5 2.95	5 3.07	5 1.41	5 1.17	July 1, 1877, to September 1, 1882	4 22.71
Fredericksburg	5 1.12	5 1.81	5 1.46	6 3.14	6 4.21	6 1.96	6 2.95	6 2.28	5 3.46	5 2.40	5 2.15	5 1.50	April 1, 1877, to September 1, 1882	4 28.10

The mean annual and mean monthly rainfall, in inches and hundredths of an inch, as registered at twenty-seven stations in Texas, &c.—Continued.

Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Period of registration.	Mean annual rainfall.
	11	11	11	12	12	12	12	12	11	11	11	11		10
Galveston	3.55	3.27	2.82	3.22	3.99	4.31	3.99	6.00	6.59	5.41	5.59	4.85	April 1, 1871, to September 1, 1882	51.84
	2	2	2	2	2	2	2	2	1	1	1	1		1
Graham	1.29	2.53	1.17	2.28	2.85	2.03	5.24	5.16	2.94	2.40	1.21	2.31	January 1, 1880, to October 1, 1882	25.11
	3	3	3	4	4	4	3	3	2	2	3	3		1
Henrietta	1.63	1.14	1.81	2.86	2.63	3.26	2.24	3.98	1.51	1.38	1.22	0.87	April 1, 1879, to September 1, 1882	22.73
	10	10	10	10	11	11	11	11	10	10	10	10		9
Indianola	2.18	2.12	2.40	1.51	2.92	2.40	2.76	4.74	6.22	3.91	3.22	3.56	May 1, 1872, to September 1, 1882	38.65
	5	5	5	5	5	5	4	5	4	4	4	4		3
Jacksboro'	0.86	1.86	1.03	1.77	3.50	4.10	4.88	2.24	2.73	2.61	1.83	1.25	January 1, 1878, to September 1, 1882	26.20
	6	6	6	6	6	6	6	6	6	5	5	5		5
Laredo	1.38	2.29	1.74	1.31	2.51	1.62	2.40	5.74	1.02	1.40	1.10	1.22	January 1, 1877, to October 1, 1882	24.16
	5	5	5	5	4	5	5	5	5	5	5	5		4
Mason	1.37	1.48	1.02	2.28	3.80	1.63	2.45	2.08	3.96	2.06	1.51	1.84	June 1, 1877, to May 1, 1882	24.90
	1	1	1	1	1	1	1	1						0
Palestine	1.65	3.68	3.37	3.42	7.56	0.83	6.52	5.32	.....	.....	.....	.....	January 1, 1882, to September 1, 1882	.....
	5	5	5	6	6	6	6	6	5	5	5	5		4
Rio Grande City	1.26	0.91	1.58	0.83	2.69	0.66	1.87	5.90	2.40	2.49	0.86	1.65	April 1, 1877, to September 1, 1882	25.27
	5	5	6	6	6	6	6	6	5	5	5	5		4
San Antonio	1.73	2.16	1.66	3.09	3.74	2.14	3.28	3.67	4.27	2.79	2.10	2.31	March 1, 1877, to September 1, 1882	32.77
	5	5	5	5	6	6	6	6	5	5	5	5		4
Stockton	0.36	0.51	0.55	0.30	1.20	2.10	2.23	3.08	3.72	1.07	0.55	0.66	May 1, 1877, to September 1, 1882	15.91
	5	5	5	6	6	6	6	6	5	5	5	5		4
Uvalde	0.80	1.17	1.50	1.79	3.28	0.90	2.24	3.19	2.48	1.26	1.37	1.93	April 1, 1877, to September 1, 1882	24.00
	11	11	11	11	11	11	11	11	11	11	11	11		11
Shreveport, La	4.88	4.99	4.97	6.09	4.74	2.90	4.63	2.13	4.67	3.93	4.19	5.05	October 1, 1871, to October 1, 1882	53.07

APPENDIX No. 12.

TABLES PREPARED BY THE CHIEF SIGNAL OFFICER OF THE UNITED STATES ARMY, SHOWING THE AVERAGE MONTHLY RAINFALL AT DIFFERENT POINTS IN CALIFORNIA, OREGON, WASHINGTON TERRITORY NEVADA, AND ARIZONA.

SIGNAL OFFICE, WAR DEPARTMENT.
Washington City, February 26, 1885.

SIR: Referring to your letters of the 14th and 19th instant, requesting certain rainfall data for California, Oregon, and Washington Territory, I have the honor to transmit herewith an extract from the records of this office.

I am, very respectfully, your obedient servant,

W. B. HAZEN,
Brig. and Brt. Maj. Gen'l, Chief Signal Officer U. S. Army.

Mr. JOSEPH NIMMO, Jr.,
Chief, Bureau of Statistics, Treasury Department, Washington, D. C.

Statement showing the average annual precipitation, in inches and hundredths, at the below-named stations of the Signal Service, United States Army, computed from the commencement of observations at each, to and including December, 1884, from the records on file at the office of the Chief Signal Officer of the Army.

Stations.	Precipitation.											
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Boise City, Idaho	2.43	1.76	1.49	1.19	1.02	0.94	0.20	0.09	0.59	1.63	0.73	2.35
Cape Mendocino, Cal.	2.09	2.40	2.60	3.13	1.00	0.47	0.22	0.11	0.93	1.74	1.89	2.42
Fort Bidwell, Cal.*	3.41	2.52	1.82	1.62	1.35	0.58	0.26	0.17	0.36	1.19	1.86	3.13
Fort Canby, Wash.†	{8.40	9.95	8.82	3.59	3.32	2.21	1.69	1.36	3.01	4.90	9.11	7.72
	{6.45	5.20	2.18	2.98	1.30	2.16	1.73	1.23	4.72	5.94	6.20	5.89
Los Angeles, Cal.	2.21	4.30	3.44	2.00	0.57	0.22	‡	(‡)	(‡)	0.59	0.96	3.92
Olympia, Wash	8.80	9.74	5.53	4.24	2.58	1.21	0.83	0.85	2.99	5.44	7.31	9.62
Portland, Oreg	7.06	7.86	6.88	3.49	2.35	1.79	0.79	0.77	1.82	4.88	7.08	8.22
Red Bluff, Cal	6.08	4.47	3.55	3.09	1.20	0.28	0.01	0.04	0.42	1.43	2.20	5.36
Roseburg, Oreg	6.47	4.75	3.95	3.00	1.77	1.01	0.47	0.39	0.95	2.91	3.40	6.31
Sacramento, Cal.	3.97	3.83	3.81	3.78	0.78	0.31	(‡)	(‡)	0.33	1.04	1.17	4.05
San Diego, Cal	1.81	2.61	1.38	0.84	0.41	0.07	0.02	0.21	0.05	0.48	0.66	2.33
Spokane Falls, Wash	2.82	3.02	1.10	1.82	1.18	1.40	1.05	0.32	1.46	2.63	1.81	2.37
Tatoosh Island, Wash	13.32	6.04	2.41	3.31	4.45	3.98	1.73	5.49	6.15	6.66	11.32	11.46
Winnemucca, Nev.	1.18	0.95	0.89	1.03	0.91	0.72	0.13	0.10	0.39	0.63	0.48	1.27
Yuma, Ariz.	0.38	0.14	0.24	0.09	0.06	0.01	0.20	0.26	0.09	0.04	0.03	0.49

* From post surgeons' reports.

† The data in the upper line is from post surgeons' reports, covering the period 1871 to 1880, inclusive.

‡ Inappreciable—less than .01 of an inch.

SIGNAL SERVICE, WAR DEPARTMENT,
Washington City, February 25, 1885.

APPENDIX No. 13.

STATEMENT SHOWING THE NUMBER OF ACRES PATENTED AND UNPATENTED IN THE STATE OF TEXAS, FROM THE ANNUAL REPORT OF THE COMMISSIONER OF THE GENERAL LAND OFFICE OF THAT STATE.

County.	Patented.	Unpatented.	County.	Patented.	Unpatented.
	Acres.	*Acres.*		*Acres.*	*Acres.*
Anderson	615	10,240	Ellis	1,892	
Andrews	26,720	12,320	El Paso	72,640	1,254,400
Angelina	38,985	12,585	Encinal	374,207½	87,870
Aransas	640	640	Erath	111,345½	3,520
Archer	64,307	7,521	Falls		
Armstrong	215,380	2,541½	Fannin	4,013½	320
Atascosa	75,390	7,479	Fayette		
Austin	26,240	640	Fisher	280,802	3,250
Bailey			Floyd	307,256½	640
Bandera	91,275	77,126	Fort Bend	42,222	41,998
Bastrop			Franklin	1,600	2,560
Baylor	176,213	48,320	Freestone	640	1,000
Bee	27,080	1,384½	Frio	114,880	15,486
Bell	9,323	4,139	Gaines	207,720	
Bexar	30,257	9,777	Galveston	1,280	1,280
Blanco	45,898	11,912	Garza	229,935	50,998
Borden	210,643½	83,524	Gillespie	104,495	5,006
Bosque	3,940	1,280	Goliad	10,480	2,400
Bowie	23,356	1,062	Gonzales	960	
Brazos		1,157½	Gray	174,720	34,560
Brazoria	74,240	5,760	Grayson	2,565	
Briscoe	230,948	640	Grimes		
Brown	86,495½	14,608	Greer		
Burleson			Gregg		
Burnet	26,949	17,670	Guadalupe	10,880	640
Caldwell	8,320		Hale	275,559	51,840
Calhoun	1,871		Hall	239,700	2,816
Callahan	138,557½	1,681	Hamilton	15,643	34,404
Cameron	6,448	68,160	Hansford	105,060	166,720
Camp			Hardeman	388,443	208,971
Carson	157,960	3,200	Hardin	33,672	31,294
Cass	1,495½	640	Harris	70,675	8,139
Castro	194,780		Harrison	1,920	57,360
Chambers	46,080	23,680	Hartley	94,080	
Cherokee	4,160		Haskell	67,184	31,828
Childress	204,160	16,000	Harp	7,736	4,178
Clay	67,500½	1,920	Henderson		6,572
Coleman	155,630½	4,480	Hemphill	123,520	87,280
Cottle	84,538½	12,613½	Hidalgo	58,109	200,650
Collingsworth	291,200	640	Hill	2,978	2,560
Cochran			Hockley	428½	
Collin			Howard	227,766½	77,615
Colorado	38,501½	4,480	Hood	1,600	
Comal	25,211	2,539½	Hopkins	640	
Comanche	77,964	640	Houston	320	1,280
Concho	140,393	26,463	Hunt		
Cooke	21,070½	640	Hutchinson	185,615	55,640
Coryell	9,819	4,141	Jack	87,366½	7,718½
Crockett	1,620,060	732,939	Jackson	13,120	746½
Crosby	213,895		Jasper	44,640	62,682
Dallas	3,200		Jefferson	127,676	1,280
Dallam	152,000	5,440	Johnson	27,960	5,120
Dawson	186,197		Jones	104,734½	2,960
Deaf Smith	231,040	640	Karnes	4,531	2,560
Denton	5,825	2,578	Kaufman		640
De Witt	24,494		Kendall	79,865	3,178
Delta	640		Kerr	177,221½	27,581
Dickens	165,448	1,280	Kent	164,266	142,520
Dimmit	125,011½	11,807	King	82,314½	68,504
Donley	206,516	5,760	Kimble	234,133	60,426
Duval	276,128	29,660	Kinney	176,010	99,433
Eastland	34,560	2,560	Knox	110,547	162,221
Edwards	261,986	56,219	Lamar	4,086½	

Statement showing the number of acres patented and unpatented, &c.—Continued.

County.	Patented.	Unpatented.	County.	Patented.	Unpatented.
	Acres.	*Acres.*		*Acres.*	*Acres.*
Lamb	20,000	2,560	Robertson	1,280	2,580
Lampasas	61,437½	15,554	Rockwell		
La Salle	268,243	6,720	Runnels	126,256	25,419
Lavaca	13,868	320	Rusk		
Leon	3,840		Sabine	20,444	9,320
Liberty	35,760	34,709	San Augustine	22,120	640
Lipscomb	47,760	237,080	San Jacinto	213½	9,600
Limestone	4,160	1,920	San Patricio	7,674	
Live Oak	121,041	2,560	San Saba	92,571	5,422
Lee			Scurry	81,159	39,680
Llano	44,100	3,840	Shackelford	175,765	
Lubbock	257,262	640	Shelby	640	2,346
Lynn	254,320	640	Sherman	290,840	
Madison			Smith	640	640
Marion	1,280	640	Somervell		
Martin	210,563		Starr	168,080	57,808
Mason	80,571	3,921	Stephens	130,610	2,560
Matagorda	4,800		Stonewall	111,220	147,086
Maverick	53,843	4,997½	Swisher	280,287	12,800
McCulloch	22,067	2,240	Tarrant	11,039	560
McLennan			Taylor	86,123	26,198
McMullen	113,577	16,200	Terry	263,360	
Medina	130,230	19,358	Throckmorton	23,147	3,419
Menard	163,395	12,760	Titus	1,920	2,880
Milam			Tom Green	1,379,341	1,209,074
Mitchell	224,473	82,288	Travis	21,229	6,080
Montague	24,720	4,597	Trinity	11,925	640
Montgomery	8,426	640	Tyler	60,160	1,280
Moore	261,698		Upshur	1,600	640
Morris	1,920	2,560	Uvalde	187,831	12,935
Motley	201,144	16,685	Van Zandt	480	742
Nacogdoches	3,247	5,760	Victoria	41,892	5,917
Navarro	2,415	493	Walker	640	1,280
Newton	64,481	49,449	Waller	40,873	39,040
Nolan	177,746	67,200	Washington		
Nueces	100,355	5,848	Webb	95,786	22,208
Ochiltree	150,820	127,360	Wharton	118,650	30,967
Oldham	146,680	2,133	Wheeler	293,208	1,920
Orange	14,720	1,299	Wichita	74,808	14,328
Palo Pinto	148,680	4,673	Wilbarger	56,787	19,715
Panola	3,894	1,070	Williamson	5,760	553
Parker	110,535		Wilson	2,880	1,280
Parmer			Wise	17,660	1,267
Pecos	1,240,177	1,357,922	Wood	438½	533
Polk	16,688	11,485	Yoakum	257,920	
Potter	199,023	40,640	Young	28,125	1,280
Presidio	1,746,250	1,807,515	Zapata	62,051	48,580
Raine	3,872		Zavala	75,345	33,132
Randall	209,380	640	Total	21,584,828	10,131,273
Red River	15,060	4,667			
Refugio	640				
Roberts	84,800	60,840			

	Acres.
Total patented	21,548,828
Total unpatented	10,131,273
Grand total	31,716,101
Add under act of 1883	1,000,000
Total	32,716,101
Sales under acts of 1874, 1879, and 1881	6,072,603
Sales under act of 1883 (Land Board)	1,965,201
Total of sales	8,037,804

RECAPITULATION.

	Acres.
Total school land	32,716,101
Total sales	8,037,804
Balance to credit of fund	24,678,297

APPENDIX No. 14.

LETTER FROM DR. FRANKLIN B. HOUGH, IN REGARD TO THE EFFECT OF FORESTS IN INCREASING THE AMOUNT OF RAINFALL.

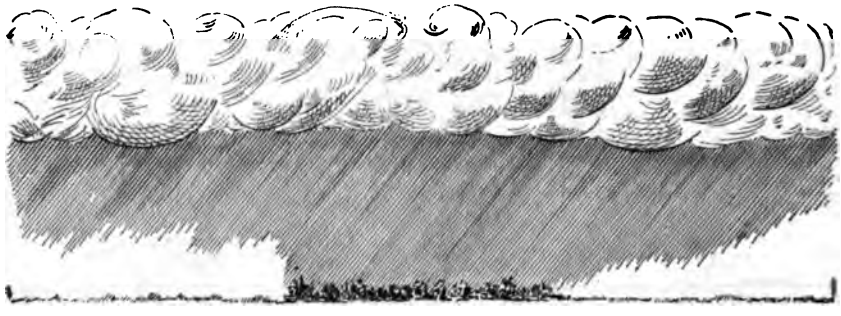
ALBANY, N. Y., *April* 20, 1885.

DEAR SIR: Your letter of the 10th instant has been forwarded to me from Lowville, and I have delayed reply on account of sickness. I find myself slowly recovering, and hope to be well again soon.

Of course, trees in a forest do not "attract" rain in the ordinary sense of that word, but they do this: They shade the ground from the sun, and shelter it from drying winds. They prevent snows from drifting, and delay the thawing of winter frosts. All of these tend to maintain humidity in the soil, to encourage the percolation of rains, and to diminish or wholly prevent the flowing off of water from the surface. They equalize the flow of streams, and prevent erosions.

But in the season of active vegetation there is an active evaporation going on from the leaves, the water being drawn from the soil, and sometimes from a considerable depth. This evaporation is doubtless less than would have happened with full exposure to sun and winds. It tends to render the air within the woods more humid. It is also a *cooling* process. By increasing the humidity and reducing the temperature, we evidently tend to approach the dew-point. In some climates it actually does reach this point and cause rain, where it would not have rained on a cleared area.

I have often seen in a "dry spell" a passing cloud send down filaments of rain which vanished and dried up before they reached the ground. I have also seen, where this cloud passed over a forest of considerable area, that these filaments of rain became a copious shower, which dried up when they came over the heated and naked fields beyond, something like the following sketch:



In some districts, where rocks and bowlders, once thickly covered with shrubbery, vines, and vegetation, have been cleared off and the stones exposed to the sun, they are now troubled with protracted drought, unknown in early days. The cause is evidently due to the stones becoming heated and remaining warm till into the night, preventing showers of rain and the deposit of dew.

I consider fires—annually set by the Indians from time immemorial and until white settlement—as sufficient to account for "oak openings," "barrens," and very many of the prairies. They all will bear trees under protection, and the climate improves. An obvious cause of failure of wells, &c., in the Western States, east of the Mississippi, can be found in the deepening of channels by the clearing of woods that once bordered the streams.

I have more confidence in the possibility of improving the plains, say out to 100° west longitude, than some have, but would not advise attempting too much at once. I would begin along the streams and gradually encroach upon the arid lands, where possibly I would divide up the country into compartments by planting belts of cotton-

wood, gray willow, carrageen, and other hardy trees and shrubs, and under their shelter others of less hardy but more valuable kinds.

There appears to be evidence that there is now a great deal more water in the land-locked basin of the Great Salt Lake in Utah than formerly. It has probably been brought in by the winds and condensed from the already half depleted moisture of the air by the cultivation introduced by man.

I do not know that I have answered your inquiries fully; there are some facts about the effect of woodlands upon climate that cannot be answered until further researches have determined facts now unknown.

Very truly yours,

FRANKLIN B. HOUGH.

Mr. J. NIMMO,
Chief of Bureau of Statistics.

APPENDIX No. 15.

LETTER FROM GEORGE B. LOVING, ESQ., OF FORT WORTH, TEX., IN REGARD TO THE LOSSES OF CATTLE DURING THE WINTER OF 1884-'85, THE DECLINE IN THE VALUE OF STOCK, AND THE FUTURE OF THE STOCK-GROWING INTERESTS OF TEXAS.

[Daily and Weekly Gazette, George B. Loving, proprietor.]

FORT WORTH, TEX., *April* 15, 1885.

DEAR SIR: Absence from the city and pressure of business has prevented me from answering your several letters sooner. The loss of cattle in this State during the past winter has been very heavy in some localities, while in others it has been much less. The loss in that part of the State known as the Panhandle will probably not exceed 5 per cent., and the same may be said of the extreme western part of the State in what is known as the Pecos River country. In some localities in the central part of the State the loss is estimated as high as 30 to 40 per cent. Taking the entire State, it will probably average between 15 and 20 per cent. The loss during the past winter has been the heaviest ever known in Texas for some length of time and will probably not occur again for many years; although, from present appearances, there is a strong probability that the entire grazing country in Texas will be largely overstocked within the next few years, caused by the outlets for surplus cattle being cut off by the recent enactment of quarantine laws in Kansas and other States and Territories. These laws, if enforced, will very materially injure the stock business in this State, from the fact that in order to carry it on successfully, an outlet must be found for our surplus stock cattle each year. Stock cattle in Texas have declined in value fully one-third in the last six or eight months. This decline was first caused by the stringency in money matters, but has been greatly increased within the last few months by the quarantine laws referred to above.

Nearly the entire drive from Texas, heretofore by trail, has been made between the 1st of March and the 1st of July. It will be impossible to drive Texas cattle to Kansas, if they must enter that State between the 1st of December and 1st of March, as the latter date is too early to handle cattle from this State, while December is too late, the cold weather making it impossible to handle them at that time. Heretofore thousands of cattle have been contracted for earlier than this for the spring drive, while this spring comparatively nothing has been done in that respect. The depression in the cattle business here, now that winter is over, is almost entirely due to the rigid quarantine laws enacted by Kansas and other Northern and Western Territories. In reference to Mr. Atwater's suggestion as to the days of free grazing in Texas being over, will say that there will doubtless be for many years to come still much free grazing in this State, although there is a very considerable disposition among the cattlemen to buy or lease their ranges where it can be done. The grazing section of Texas being unsuited for agricultural purposes, it will be impossible for ranchmen to ever grow feed to fatten their cattle on during the winter. They may, however, by buying or leasing and inclosing their ranges be able to protect the grass to a considerable extent; as by this arrangement their range would not be subjected to the drifts of neighboring herds, and would enable them to regulate the number of cattle grazed on any given quantity of land in such a way as not to permanently injure the range.

Instead of cattlemen being hopeful of better times my observation has led me to believe quite the reverse. The majority of cattle ranches now in Texas are now for sale at fully 25 per cent. less than they could have been bought for twelve months ago, and, generally speaking, it may safely be said that a large majority of the ranchmen of Texas would willingly retire from the business if they could dispose of their holdings at anything like a reasonable price. There is considerable talk of trying to establish a trail through the neutral strip and the eastern part of Colorado, thus avoiding Kansas, but I am of the opinion that this route is not feasible, first on account of the scarcity of water in Eastern Colorado, and, secondly, for the reason that in all probability the ranchmen and citizens of eastern Colorado would soon raise the same objection to the establishment of a trail through the eastern part of their State

that has been made by the Kansas people. I see no solution of this vexed question, which threatens to disastrously end a business that has heretofore been extensively and lucratively carried on in this State, except by the establishment of a permanent cattle trail, thus making an outlet for the surplus of the cattle raised in this State.

Referring to your inquiry as to the number of cowboys employed in this State, will say that I cannot even approximate the number, and know of no data by which I could be able to arrive at the desired information.

The enactment of the quarantine laws referred to does not interfere with the shipment of fat cattle ready for the butchers direct from Texas to Saint Louis or Chicago; but this outlet is not sufficient, from the fact that Texas has for several years disposed of fully 500,000 cattle, which have been used to stock northern and western ranges, and which were not suitable to go direct to the beef markets. The drive of Texas cattle to the northern and western ranges began immediately after the close of the war, and were driven principally over what is known as the Chisholm trail to Kansas, a great many of them, however, going out in a western direction to New Mexico and Colorado. For the last twenty years Texas has probably furnished on an average 400,000 head of stock cattle, which have been distributed over the Indian Territory, Kansas, Colorado, New Mexico, Arizona, Wyoming, Montana, Dakota, and other northern Territories. As many of these were full-grown cattle it probably would not be an overestimate to put their value at an average of $15 per head, which would show an income to the State (not including the beef cattle shipped direct to market) of $6,000,000 per annum. The range-cattle business is now being carried on over almost the entire Territory of New Mexico and Arizona. These two Territories, but for their quarantine laws, would furnish an outlet for the present year for from 75,000 to 100,000 head of Texas cattle. A great deal of the territory of Old Mexico, especially the northern part of it, is well adapted to stock-raising, and is receiving more attention as a stock-growing country than ever before.

In reference to the number of cattle in Texas, will say that I know of no reason for changing the figures originally given you, except the heavy death loss during the past winter, which will probably decrease the number from one to one and one-half million. The rapid decline of cattle since my first report would probably justify a reduction in values of about $2 per head. I am of the opinion that your estimate of 5,000,000 of cattle for Texas is far too low, and that your estimate of one cowboy for each 500 will show a great many more cowboys than are actually engaged in that business; for instance, on many of our largest ranches owning 50,000 to 60,000 cattle, there are not more than 50 or 60 cowboys during the busy season, and probably not more than half that number during the winter.

In reference to the increase in the rainfall in Texas, will say that all the grazing part of the State is still subject to considerable droughts, often lasting for three or four months during the season, and taking it one month with another I am of the opinion that the rainfall is greatly increasing in this State during the last twenty years, and will, in my opinion, continue to increase as the country develops and is converted into an agricultural country. Instead, however, of the nutritious grasses giving way, I think the increased rainfall is having, and will have, just the opposite effect, and would greatly improve the range, were it not overstocked with too many cattle, besides being subjected in most parts of the grazing portion of the State to an increased supply of prairie dogs each year, which, in my opinion, are doing more damage to the grass of Western Texas than are all the cattle combined.

Replying to your telegram of the 10th, will say that there have been slaughtering-houses established at this place and Victoria, Tex., for the purpose of slaughtering and shipping in refrigerator cars beef in quarters to the Eastern markets. Neither of these houses are being operated at this time, principally on account of the scarcity of fat cattle, and partly on account of their inability to ever make it a success. My information is that both of the establishments have proved a losing business so far. The theory, I think, is a good one, but cannot be successfully run unless backed with an abundance of capital, and until the Texas people are willing to sell their cattle here at prices obtainable at Saint Louis and Chicago, less the freight.

For the want of time I cannot to-day carefully examine the different reports and documents sent me, but have simply answered briefly the matters referred to in your several letters. Would do so more fully but from the fact that I fear it will be too late to answer the purposes intended. If I can be of any further service to you, do not hesitate to command me.

Yours, very truly,

GEO. B. LOVING.

Hon. JOSEPH NIMMO, Jr.,
Chief Bureau Statistics,
Treasury Department, Washington, D. C.

APPENDIX No. 16.

QUARANTINE LAW OF THE STATE OF KANSAS AGAINST TEXAS CATTLE.

[House bill No. 116. First published March 12, 1885.]

AN ACT for the protection of cattle against Texas, splenic, or Spanish fever, and repealing chapter three of the special session laws of 1884.

Be it enacted by the legislature of the State of Kansas: No person or persons shall, between the 1st day of March and the 1st day of December of any year, drive or cause to be driven into or through any county or part thereof in this State, or turn upon or cause to be turned or kept upon any highway, range, common, or uninclosed pasture within this State any cattle capable of communicating or liable to impart what is known as Texas, splenic, or Spanish fever. Any person violating any provision of this act shall, upon conviction thereof, be adjudged guilty of a misdemeanor, and shall for each offense be fined not less than $100 and not more than $2,000, or be imprisoned in the county jail not less than thirty days and not more than one year, or by both such fine and imprisonment.

SEC. 2. It shall be the duty of any sheriff, under sheriff, deputy sheriff, or constable within this State, upon a complaint made to him by any citizen of the State, or otherwise having notice or knowledge that there are within the county where such officer resides, cattle believed to be capable of communicating or liable to impart the disease known as Texas, splenic, or Spanish fever, to forthwith take charge of and restrain such cattle under such temporary quarantine regulations as will prevent the communication of such disease, and make immediate report thereof to the live-stock sanitary commission, and such officer shall keep said cattle in custody as aforesaid until released by order of said live-stock sanitary commission, and no officer who shall take or detain any cattle under the provision of this act shall be liable to the owner or owners of such cattle for any damages by reason of such taking or detention, or by reason of the performances of any other duty enjoined in this act.

SEC. 3. Whenever the live-stock sanitary commission shall determine that certain cattle within the State are capable of communicating or liable to impart Texas, splenic, or Spanish fever, they shall issue their order to the sheriff or any constable of the county in which said cattle are found, commanding him to take and keep such cattle in his custody, subject to such quarantine regulations as they may prescribe, until the 1st day of December next ensuing, on which date they shall direct such officer to deliver said cattle to their owner or owners or to his or their agents: *Provided, however*, That before any cattle so held shall be delivered as aforesaid, there shall be paid to said live-stock sanitary commission all the costs and expenses of taking, detaining, and holding said cattle; and in case such costs and expenses are not so paid within ten days after the said 1st day of December, the said officer shall advertise in the same manner as is by law provided in cases of sales of personal property, that he will sell such cattle or such portion thereof as may be necessary to pay such costs and expenses, besides the expense of such sale; and at the time and place so advertised he shall proceed to sell as many of said cattle as shall be necessary to pay such costs and expenses and the expense of sale, and shall forthwith pay over to the live-stock sanitary commission any amount so received in excess of the legal fees and expenses of such officer. Any officer performing any of the duties enjoined in this section or in the next preceding section of this act shall receive the same compensation therefor as is prescribed by law for similar services, to be paid as other expenses of said live-stock sanitary commission are paid, as provided by law.

SEC. 4. Any person or persons violating any of the provisions of this act shall be liable to any party injured, through such violation, for any damages that may thereby arise from the communication of Texas, splenic, or Spanish fever, to be recovered in a civil action; and the party so injured shall have a lien for such damages on the cattle so communicating the disease.

SEC. 5. In the trial of any person charged with the violation of any of the provisions of this act, and in the trial of any civil action brought to recover damages for the communication of Texas, splenic, or Spanish fever, proof that the cattle which such person is charged with driving or keeping in violation of law, or which are

claimed to have communicated the said disease, were brought into this State between the 1st day of March and the 1st day of December of the year in which the offense was committed or such cause of action arose, from south of the thirty-seventh parallel of north latitude, shall be taken as *prima facie* evidence that such cattle were capable of communicating and liable to impart Texas, splenic, or Spanish fever, within the meaning of this act, and that the owner, or owners, or persons in charge of such cattle had full knowledge and notice thereof at the time of the commission of the alleged offense.

Provided, however, That if the owner or owners or person in charge of such cattle shall show by such certificate as shall hereinafter be designated by the live-stock sanitary commission of this State, that the said cattle had been kept since the 1st day of December of the previous year west of the east line of the Indian Territory and north of the thirty-sixth parallel of north latitude or west of the twenty-first meridian of longitude west from Washington and north of the thirty-fourth parallel of north latitude the provisions of this section shall not apply thereto: *Provided also,* That the provision of this section shall not apply to cattle which are owned or kept in this State and which may drift across the south line of the State when the said cattle are gathered in a general round-up and returned under the direction of any live-stock association of this State.

SEC. 6. Whenever two or more persons shall, in violation of this act, at the same time or at different times during the same year, drive or cause to be driven upon the same highway, range, common, or pasture within this State any cattle capable of communicating, or liable to impart, Texas, splenic, or Spanish fever, they shall be jointly and severally liable for all damages that may arise from the communication of such disease, at any time thereafter during the same year to any native, domestic, or acclimated cattle that shall have been upon the same highway, range, common, or pasture so previously traveled over by such first-mentioned cattle.

SEC. 7. Justices of the peace within their respective counties shall have criminal jurisdiction in all cases arising under the provisions of this act.

SEC. 8. It shall be the duty of the prosecuting attorney of the proper county to prosecute on behalf of the State all criminal cases arising under this act.

SEC. 9. Chapter 3 of the laws of 1884, and all other acts or parts of acts in conflict with any of the provisions of this act are hereby repealed.

SEC. 10. This act shall take effect from and after its publication in the official State paper.

Approved March 7, 1885.

I hereby certify that the foregoing is a true and correct copy of the original enrolled bill now on file in my office.

In testimony whereof I have hereunto subscribed my name and affixed my official seal. Done at Topeka, Kans., this 7th day of March, A. D. 1885.

[SEAL.]

E. B. ALLEN,
Secretary of State.

APPENDIX No. 17.

QUARANTINE LAW OF THE STATE OF COLORADO AGAINST TEXAS CATTLE APPROVED MARCH 21, 1885.

THE TEXAS FEVER LAW.

AN ACT to prevent the introduction of any infectious and contagious diseases among the cattle and horses of this State.

Whereas there is prevalent among cattle and horse stock in the States and Territories south of the thirty-sixth parallel of north latitude certain infectious and contagious diseases known as the Texas or splenic fever, Spanish itch, and other diseases of a dangerous and contagious nature; and

Whereas it is essential for the protection of the cattle and horses of Colorado to prevent the introduction and spread of all such diseases within this State; therefore

Be it enacted by the general assembly of the State of Colorado: It shall be unlawful for any person, association, or corporation to bring or drive, or cause to be brought or driven into this State, any cattle or horses having an infectious or contagious disease, or which have been herded or brought into contact with any other cattle or horses laboring under such disease, at any time within ninety days prior to their importation into this State.

SEC. 2. It shall be unlawful for any person, association, or corporation to bring or drive, or cause to be brought or driven, into this State between the 1st day of April and the 1st day of November any cattle or horses from a State, Territory, or country south of the thirty-sixth parallel of north latitude, unless said cattle or horses have been held at some place north of the said parallel of latitude for a period of at least ninety days prior to their importation into this State, or unless the person, association, or corporation owning or having charge of such cattle or horses shall procure from the State veterinary sanitary board a certificate or bill of health to the effect that said cattle or horses are free from all infectious or contagious diseases, and have not been exposed at any time within ninety days prior thereto to any of said diseases, the expense of inspection connected herewith to be paid by the owner or owners of such cattle or horses.

SEC. 3. Any person violating the provisions of this act shall be deemed guilty of a misdemeanor, and shall, on conviction, be punished by a fine of not less than five hundred dollars ($500), or more than five thousand dollars ($5,000), or by imprisonment in the county jail for a term of not less than six months and not exceeding three years, or by both such fine and imprisonment.

SEC. 4. If any person, association, or corporation shall bring or cause to be brought into this State any cattle or horses in violation of the provisions of section 1 or 2 of this act, or shall by false representation procure a certificate of health as provided for in section 2 of this act, he or they shall be liable, in all cases, for all damages sustained on account of disease communicated by or from said cattle or horses, judgment for damages in any such case, together with the costs of action, shall be a lien upon all such cattle and horses, and a writ of attachment may issue in the first instance without the giving of a bond, and the court rendering such judgment may order the sale of said cattle or horses, or so many thereof as may be necessary to satisfy said judgments and costs. Such sales shall be conducted as other sales under execution.

SEC. 5. Inasmuch as the public interest requires that this act should take effect at once, therefore an emergency exists, and this act shall take effect and be in force from and after its passage.

APPENDIX No. 18.

QUARANTINE LAW OF THE TERITORY OF WYOMING.

GOVERNOR TO APPOINT TERRITORIAL VETERINARIAN.

SEC. 31. The governor of the Territory is hereby authorized to nominate, which nomination shall be made upon the recommendation of the Stock Growers' Association of the Territory, and by and with the advice and consent of the council appoint, without unnecessary delay after the 8th day of March, 1882, a competent veterinary surgeon who shall be known as the territorial veterinarian, and on entering on his duties shall take an oath to well and truly perform his duties as provided by law.

AUTHORITY TO QUARANTINE.

SEC. 33. In all cases of contagious or infectious disease among domestic animals in this Territory the veterinarian shall have authority to order the quarantine of infected premises, and in case such disease shall become epidemic in any locality in this Territory the veterinarian shall immediately notify the governor of the Territory, who shall thereupon issue his proclamation forbidding any animal of the kind among which said epidemic exists to be transferred from said locality without a certificate from the veterinarian, showing such animal to be healthy.

GOVERNOR MAY PROHIBIT IMPORTATION.

SEC. 37. Whenever the governor of the Territory shall have good reason to believe that any disease covered by this chapter has become epidemic in certain localities in another State or Territory, or that the conditions exist which render domestic animals liable to convey disease, he shall thereupon, by proclamation, schedule such localities and prohibit the importation from them of any live stock of the kind diseased into this Territory, except under such restrictions as he may deem proper. Any corporation, or any person or persons, who after the publishing of such proclamation shall knowingly receive in charge any such animal or animals from any one of said prohibited districts, and transport or convey the same within the limits of this Territory, shall be deemed guilty of a misdemeanor, and upon conviction fined not less than one thousand dollars nor more than ten thousand dollars for each and every offense, and shall further become liable for any and all damages and loss that may be sustained by any person or persons by reason of the importation or transportation of such prohibited animals.

APPENDIX No. 19.

OPINION OF DR. JAMES V. HOPKINS, TERRITORIAL VETERINARIAN OF WYOMING, IN REGARD TO THE RELATIVE LIABILITY TO DISEASE RESULTING FROM THE MOVEMENT OF CATTLE FROM TEXAS BY RAIL AND BY TRAIL.

[From the annual report of the Wyoming Stock Growers' Association for the year 1884.]

SOUTHERN CATTLE.

It is reported that arrangements are being made to transport Texas and other southern cattle during the coming summer to Ogalalla for the purpose of stocking the ranges of Nebraska and Wyoming.

Gentlemen, this is a serious question, to which I hope you will give your earnest attention. When southern cattle are driven north, consuming three or four months on the trail, the change of feed and lapse of time have induced a change in the system of the animal—they no longer contain a virus spreading disease, and such cattle are perfectly safe to add to our home herds.

If there are any southern gentlemen here, I do not wish them to misunderstand me. Wyoming needs the Texan cattle, but experience has taught us that transporting Texas cattle north of a certain latitude by railroad, has been followed by the spread of Texas fever among northern cattle.

Texas fever is an enzootic disorder, probably due to the food on which southern cattle subsist, whereby the systems of these animals become charged with deleterious principles, that are afterwards propagated and dispersed by the excreta of apparently healthy animals.

In Texas, cattle of all ages, from the time they begin to graze, are afflicted with the malady in a latent or mild form.

APPENDIX No. 20.

EXTRACT FROM THE ANNUAL REPORT OF THE EXECUTIVE COMMITTEE AND SECRETARY OF THE WYOMING STOCK GROWERS' ASSOCIATION FOR THE YEAR 1885.

TEXAS FEVER.

In touching on the question of Texas fever the committee feel themselves on delicate ground. Some of our most valued members have always doubted the existence of such a disease, or that it could be dangerous in this climate and altitude; others are engaged in the business of bringing these cattle from the South. Nothing could be further from the intention of the committee than to antagonize the first class or injure the business of the other. The occurrences of last summer are now matters of history and as closely affecting this association are briefly recorded here.

It will be remembered that when we separated in April, 1884, the experiment of bringing cattle from Southern Texas by rail to Ogalalla, Nebr., and neighboring stations on the Union Pacific was about to be tried. The first shipment unloaded in May and others followed for two months. From these points they were driven north and northwest. The result was disastrous and realized fully the opinion expressed by our Territorial veterinarian, Dr. Hopkins. Within a few weeks the disease showed itself virulently among the Nebraska cattle which grazed near these unloading points, and large numbers died. Cattle which were brought east from of the Missouri River and grazed temporarily in the vicinity on their way westward, caught the infection, notably one lot of fifty bulls, all of which died within a month from the time of exposure to the contagion. The trail taken northward by the animals which had come by rail to Ogalalla became infected, especially the watering places and bed grounds, and the herds which followed later, both importations from Iowa and herds from Northern Texas, lost large numbers. Later on, the same route was followed unwittingly, and in the opposite direction by many bunches of beef cattle going southward to the railroad for shipment to Chicago. The time was very short for the development of disease in these cases, yet nearly every bunch lost from one to a dozen on the cars or in the Chicago yards. Still later, the cattle going to feeding lots in Iowa and Nebraska crossed this trail or drove upon it, and though the virus was undoubtedly mitigated by the time that had elapsed and increasing cold weather, some instances of death occurred in each herd after reaching their destination.

To ascertain beyond doubt the true cause of death your committee sent the veterinarian into the field at the earliest alarm and kept him there for some weeks. He pursued his investigations by autopsies upon the recent dead, and followed the various manifestations of this disease along the route of the Union Pacific and across country, for 200 miles northward from that railroad to the Cheyenne River. In his exhaustive examination he included many of the animals that went eastward for beef and feeding purposes. The evidence everywhere showed unquestionably splenic fever. This fever is disseminated in the dung and urine of the Southern Texans and the virus or poisonous germ is inhaled by the native cattle in grazing over these excretions.

Without enlarging further on this matter, which, however, it should be said, engrossed the entire attention of your secretary and a special force of inspectors for over a month, the conclusion of your committee is this, and they wish it clearly understood, they being actuated by no motive but that of protecting the cattle of this association: 1st. That Texan cattle brought from the southern part of Texas are dangerous to our cattle for about sixty days from the time the said Southern Texans leave their native ranges. Any method of bringing them which places them on our ranges in less than that time should be discouraged, and cattle so brought should be refused admittance. 2d. That the same cattle can be brought among our stock after said sixty days have elapsed with entire safety to us, and that recognizing the friendly and profitable relations which have for many years existed between us and our Texan friends, both those being among us and those residing in the South, we wish it to be distinctly understood, and believe we speak for the association in saying, that we do not favor or advocate the placing of a single unnecessary obstacle in the way of

the Texas trade; that we are not using, and will not allow to be used, any
or exaggerated charge of danger as a lever against their interests, but, on the
if they will bring their cattle here as harmless as they were from 1873 to
Wyoming association will raise no bar against them. In this connection the
the Union Pacific deserves earnest commendation. The committee commu
once with headquarters at Omaha, and, in the absence of other officials,
Shelby immediately ordered a thorough cleansing of all infected yards
Not only was this done at great expense in time to make them safe for the
of beeves, but at a direct loss to the road he prohibited his agents and soutl
road connections from receiving any more animals of the dangerous class d
Such prompt care for our interests merits our cordial recognition.

APPENDIX No. 21.

RECENT ACTS OF THE TERRITORY OF NEW MEXICO IN REGARD TO THE QUARANTINING OF CATTLE.

CHAPTER XLIX.

AN ACT to prevent the introduction of diseased cattle into the Territory of New Mexico. Approved March 19, 1884.

CONTENTS.

SECTION 1. Driving and transporting diseased cattle unlawful.
SEC. 2. Inspectors to be appointed, and duties.
SEC. 3. Certificate to be given, when.
SEC. 4. Term of office, fees, and mileage.
SEC. 5. Power to administer oaths.
SEC. 6. Shippers and carriers liable.
SEC. 7. Inspector may appoint deputy.
SEC. 8. Notification to inspector.
SEC. 9. Penalty for giving false certificate.
SEC. 10. Penalty for violations of act.

Be it enacted by the legislative assembly of the Territory of New Mexico. It shall be unlawful for any person or corporation to drive or transport, or cause or procure to be driven or transported, into the Territory of New Mexico any cattle which are, or within twelve months prior to their introduction into this Territory have been, affected with or exposed to any contagious or infectious disease; or which within such period have been driven or transported from or through any district of country where such disease was known to exist at the time of such driving or transporting; or without the certificate of the inspector of cattle as hereinafter provided being first obtained.

SEC. 2. The governor shall appoint, at such convenient points as he may deem proper within the Territory, and as near as possible to the frontier, inspectors of cattle, whose duty it shall be to inspect all cattle destined for introduction into the Territory, and to ascertain whether any such cattle are or have been infected with or exposed to any contagious or infectious disease, or have been driven or transported from or through any district of country where such disease was known to exist as mentioned in section 1 of this act, and for this purpose he may require affidavits of the persons in charge of such cattle as to all the facts connected with their driving or transportation.

SEC. 3. If upon such inspection and investigation such inspector shall be satisfied that such cattle are free from contagious or infectious disease, and are otherwise proper to be admitted under the provision of section 1 of this act, he shall give to the person in charge of such cattle a certificate to this effect, and if not so satisfied he shall refuse to give such certificate.

SEC. 4. The said inspectors shall hold their offices during the pleasure of the governor, and shall be entitled to receive one dollar per head for all high-grade or thoroughbred cattle inspected, and twenty cents per head for all other cattle inspected, not exceeding 1,000 head at one time, and for any excess above 1,000 in the same herd or lot, ten cents per head, and ten cents per mile for the distance necessarily traveled in going from their usual place of abode to the place of inspection; such fees and mileage to be paid by the owner of the cattle before the delivery of the certificate of inspection, and in case a certificate is not given they may be recovered by the inspector from the owner in civil action.

SEC. 5. For the purpose of taking the affidavits mentioned in section 2 of this act the inspector shall have power to administer oaths, and any person who shall swear falsely in such affidavit shall be deemed guilty of perjury.

SEC. 6. The provision of this act shall apply to shippers and carriers as well as owners of cattle, and the certificate of the inspector shall not relieve them from liability, either criminal or civil, for the introduction of cattle contrary to the provisions of section 1 of this act.

SEC. 7. The inspector may appoint a deputy, who may act in his absence.

SEC. 8. Every person having in charge cattle destined for introduction into Territory, whether as owner or carrier, or as agent of either, shall, at least ten d beforehand, notify the inspector nearest the proposed point of entrance to the Te tory, of the time and place, when and where such cattle will be ready for inspect which place shall be beyond the boundary line of the Territory, and he shall hold cattle at the place so designated until inspected.

SEC. 9. Any inspector who shall knowingly give a false certificate, or shall witl good cause under this act refuse to give a certificate of inspection, or shall willf delay in making inspection when notified, shall be deemed guilty of a misdemea and shall be liable to the injured party for damages arising from such refusa delay.

SEC. 10. Any person or corporation who shall violate the provisions of section this act shall be punished by a fine of $5,000 for each offense, to be imposed by court on conviction upon indictment or information, or to be recovered as a pen by the Territory in a civil action, and shall also be liable for all damages resul therefrom. Each lot or herd of cattle unlawfully brought into the Territory s constitute a separate offense.

SEC. 11. This act shall take effect from and after its passage.

CHAPTER LI.

AN ACT with reference to an act entitled "An act to prevent the introduction of diseased cat the Territory of New Mexico" [suspends operation of said act], approved March 19, 1884. App April 3, 1884.

Be it enacted by the legislative assembly of the Territory of New Mexico, That the govern the Territory of New Mexico is hereby authorized, whenever in his judgment the cumstances and public interest warrant and require him to do so, from time to tim suspend by proclamation the operation of an act entitled "An act to prevent the i duction of diseased cattle in the Territory of New Mexico," approved March 19, 1 or by proclamation to put the same in force at any time when suspended that he believe the circumstances or public interest require said act to be in force. Said is hereby suspended in its operation and effect from this date until the same may the governor be placed in operation and effect by his proclamation to that end.

This act shall be in full force and effect from and after its passage.

APPENDIX No. 22.

LETTER FROM THE PRESIDENT OF THE MEXICAN CENTRAL RAILWAY COMPANY IN REGARD TO THE RANGE-CATTLE BUSINESS IN MEXICO.

[Mexican Central Railway Company, limited Mason Building, No. 70 Kilby street.]

BOSTON, *April* 25, 1885.

DEAR SIR: I have your letter of the 23d instant, inquiring in regard to range and ranch cattle in Mexico.

Since the opening of our line the number of cattle in sight has evidently increased.

Between Paso del Norte and the city of Chihuahua there is a large extent of grazing country not excelled by any in the United States, with rich abundant grasses and a plentiful supply of water. It contains many fine lakes and ponds, and on it are pastured vast herds of neat cattle and horses.

In spite of the duties upon cattle there is some trade between Mexico and the United States, as you will see by our annual report for the year ending December 31, 1884 (a copy of which I send you), page 31, we carried two thousand two hundred and nineteen horses and two thousand eight hundred and fifty-five head of neat cattle. Nearly the whole of these were transported from different points in Mexico to the United States.

Our stock business is growing and the establishment of a stock-yard at El Paso would very materially increase the traffic. At present the buying of Mexican cattle is done wholly by individuals, who go to Mexico for the purpose of obtaining cattle and horses for their ranches in the United States.

Yours truly,

LEVI C. WADE, *President.*
Per G.

JONSPH NIMMO, Jr., Esq.,
Chief of Bureau of Statistics, Washington, D. C.

APPENDIX No. 23.

LETTER FROM D. W. HINKLE, ESQ., IN REGARD TO THE IMPROVEMENT OF THE BREED OF CATTLE IN TEXAS.

[Office of Southern Texas Live Stock Association, 208 Main Plaza.]

SAN ANTONIO, TEX., *March* 21, 1885.

DEAR SIR: In answer to your telegram of the 13th ultimo, asking as to "success or lack of success in introducing high-bred bulls into Southern Texas," I answer: They have been and are being successfully introdued all over the State.

There are but few, very few, of the old long-horn Texans in the State. All show that good blood has been infused.

On the Gulf coast we have the Texas Land Cattle Company, near Corpus Christi, using as fine bulls as any in the United States. R. King, same county uses only well-bred bulls; in fact, every ranch in the South is now using one-quarter, one-half, and three-quarter full blood and registered bulls. South Texas has breeders of fine bulls, who do nothing else, and can show as fine pedigree stock as are bred in Kentucky.

A. W. Moore, Bastrop County; J. D. Suycro, Bastrop County; Hon. J. M. Miller, Gonzales County; Samuel A. Wolcott, Encinal County; A. E. Carothers, La Salle County; George B. Johnston, Bexar County, and hundreds of others are breeders of only fine cattle.

In former years the losses on fine stock deterred many ranchmen from importing them, but as the country was fenced up and ranch owners improved their homes, the importations increased, until to-day no ranch owner dare use any but good grade or high-bred bulls.

I have just returned from a trip south, Dimmit County; inspected two of the largest ranches in the south, on neither of them was there a common bull, and all of the young cattle show good breeding.

W. A. Pettus, Goliad County; H. T. Clare, Bee County; William Butler, Kames County; A. Milett, La Salle County, and hundreds of others of the largest ranchmen in the south use only fine bulls.

Hon. J. M. Miller, member of Congress, can answer as to his success with Holstein cattle; he has them as fine as are bred anywhere.

We have breeders who make specialities of the Durham, Hereford, Holstein, Devon, Brahma, Polled cattle, and (for dairy purposes) Jerseys. While in some instances losses have been heavy on imported stock, it is owing largely to the fact that the great change, not only in climate but in care, comes too suddenly, and in many instances to the swindle perpetrated by northern breeders in sending out animals that had been blanketed and stabled.

Hoping this may give you some idea of our business in this section, 13088

I am yours, truly,

D. W. HINKLE.

JOSEPH NIMMO, Jr.,
Washington, D. C.

APPENDIX No. 24.

LETTER FROM E. V. SMALLEY, ESQ., OF SAINT PAUL, MINN., IN REGARD TO THE CATTLE INTERESTS OF MONTANA WITH RESPECT TO WATER-RIGHTS.

[Office of "The Northwest," Mannheimer Block, Third and Minnesota streets; E. V. Smalley, editor and publisher.]

SAINT PAUL, MINN., *April* 3, 1885.

DEAR SIR: In Montana it is membership of the round-up district association, and not ownership of water-rights, that determines a stockman's standing. Only within the last year or two has there been any marked movement towards taking up water-front lands under the desert act. Many of the largest stock-owners live in Helena, Bozeman, Deer Lodge, and Benton, and have neither pre-emption nor desert claims where their cattle range. Nor does the possession of water-rights necessarily secure admission to the associations. The water-right men are usually owners of small herds and do a little farming. Their feeling is one of hostility to the owners of large herds.

I am not as well posted on the conditions in Wyoming. The whole cattle industry on the ranges seems to me to be in a transition state, with many of the most important measures affecting it yet to be settled.

Yours, very truly,

E. V. SMALLEY.

APPENDIX No. 25.

THE RANGE-CATTLE BUSINESS OF MONTANA.

[From "The Rocky Mountain Husbandman" of April 2, 1885; published at White Sulphur Springs, Mont.]

The entire live-stock industry of Montana can at length be said to have fully recovered from the backset it received from losses precipitated by the severity of the winter of 1881–'82. During that memorable winter cattle herds were reduced from 25 to 35 per cent. and flocks from 50 to 60 per cent., and confidence in the industry was most fearfully shaken. Up to that date the operatives in the several branches of this pursuit had had plain sailing and felt perfectly secure. In looking back over the field now, it seems a little wonderful that a people should have placed such implicit faith in the elements or the country, or both, as they then did, for situated as we are—so far to the north—it is certainly remarkable that we should be blessed with a climate where stock can flourish the year round without being cared for, and nothing short of actual experience could have convinced any people that such was the case. The fact that our mountains abounded with elk, deer, and moose, and our valleys literally swarmed with buffalo and antelope, and that the few ponies which the first white men who ventured thither found in possession of the Indians who inhabited the country wintered without care was, to be sure, some evidence that Montana was naturally a stock country, but the fact did not fully assert itself until the gold stampede of 1863, 1864, and 1865 began to see in what splendid condition their pack animals and old train cattle came out in the spring. And when it was noticed that old work-steers that had hauled trains all the way from Omaha and Nebraska City, and were so poor that they could have scarcely been wintered in the barn-yards of Missouri or Illinois, where hay and grain were plenty, recruited, nothwithstanding the winter blasts, and were ready for work again in the spring, the people began to think there was more than ordinary merit in Montana bunch-grass, and the experience of these twenty years proves the truth of this conclusion. It is true that there were sceptics even in those early days who pointed to the buffalo heads on our valleys as evidence against this, asserting that the animals had died from the severity of the weather, and that Montana caught a severe winter every few years that wiped animal life from the face of the country; but in spite of these adverse observations the business flourished exceedingly well for fifteen years, when the first and only disaster of great consequence in the history of the country occurred. But this is now a thing of the past. Herd-owners and flock-masters are on their feet once more, and their reverses are forgotten. Not forgotten either, for all have learned a valuable lesson from the experience, and are now better able to cope with the winter blasts. Cattle-owners have learned that it will not do to crowd their ranges in summer, and that in winter they must have men with their herds to keep them out on high land, instead of allowing them to huddle in the willow groves along the creeks. Flock-owners have learned that a few tons of hay to every one thousand head of sheep is a great security, and that while it is possible to fetch them through nine winters out of ten without preparations, much better results are accomplished by a certain amount of feeding every winter. The truth is, civilization is death to range husbandry. In addition to the range being closely grazed, it is largely fenced. The presence of the fences catch so much snow upon our valleys that the animal that depends upon making its own living must resort to the hills, both winter and summer, a locality superior to our valleys, but somewhat limited in extent when compared to the whole country which was but a few years since one vast stock range. Yet even with the sure and gradual change that is being wrought from range husbandry to the tamer though surer modes, the interest was never more secure and cattle, horses, and sheep owners never felt so independent and their flocks and herds never increased more rapidly than now.

APPENDIX No. 26.

STATEMENT IN REGARD TO THE SUBJECT OF GRAZING AND OF IRRIGATION IN THE STATE OF NEVADA, BY HON G. W. MERRILL.

GRAZING.

The impression abroad is that Nevada is strictly a mining State, and that no other interests exist there. The error is very apparent when one notices the reports of constantly growing farming communities, and the large and constant shipment of beeves from the State. Nevada is fast assuming the position of a great cattle State. The bunch-grasses of the mountains afford excellent pasturage during the summer, while the seeming barren waste of deserts is the safeguard of winter. The snows of winter, falling deeply in the mountains, drive the cattle, horses, and sheep to the dry valleys and deserts where the snowfall is never deep, and they find good browsing on the white and black sage, and water in the pools of melted snow. The long stretches of wide prairie existing in the State, the fierce winds of winter do not gather that force that drives cattle for miles and miles against all resistance, but the high broken ranges of the mountains stand as bulwarks to break the winds and shelter is afforded in every valley.

Farming being confined to the lands in the valleys bordering immediately on a a stream, the vast territory outside is devoted to grazing, and instead of Nevada being a solitary mining camp among the barren mountains, thousands of cattle, horses, and sheep find fattening and nutritious food in the bunch-grasses that grow in the valleys and on the "barren mountains." The beef and mutton produced in the State are of exceptional quality, being juicy, firm, and tender, and are sought after by butchering firms of more noted States. On account of its superior climate Nevada is looked upon as the natural home of the horse, and for breeding purposes of both horses and cattle it is equal, if not superior, to Kentucky. Cattlemen of the south, who have examined different countries, claim Nevada as the best territory for that business. Cattle ranges are being sought for and a large acreage is being sold annually for that purpose.

Good grazing land is in demand, and large investments in stock ranges have been made in the last year by foreign firms. Several ranges have been disposed of to residents of California. English capital has also been used purchasing ranges in Elko County, and over a million dollars have changed hands in the last year. Although the assessors' reports do not show the fact yet it is ascertained from reliable authority, stockmen, associations, &c., that there are nearly 700,000 head of cattle in the State and 300,000 head of sheep.

"The hills and valleys," say the *Reno Journal*, "are fast being utilized by growing herds of improved stock. The superb climate, pure water, and nutritious grasses stand approved in the admitted superior health of the herds of horses, cattle, and sheep."

Blooded stock from the East and West has been imported during the past few years, and the farmers have taken a great deal of interest in the best breeds of cattle.

In the month of November, 1884, a gentleman in Churchill County imported a herd of the hornless Galloway cattle, costing him $40,000.

The Holstein as a fancy stock surpass all others. They cost about $3,000 to $4,000 a head and are credited with giving 50 quarts of milk a day, and have to be milked morning, noon, and night.

The Jersey, Guernsey, Alderney, Serk, and Herm have been, and are being, introduced into the State, but the general opinion coincides with the view that the Durham is the most profitable for two reasons: they produce large quantities of milk and beef, growing very large and taking on flesh in a short time. Up to within the past few years Nevada has received a large number of cattle from Texas, which were driven across the country, but of late years this source of supply has greatly diminished.

Concerning improved breeds of cattle, the *Silver State*, a paper published in Humboldt County, under date of October 28, 1884, has the following:

"The Nevada Land and Cattle Company whose headquarters are at Kelly Creek, in the eastern part of the county, sold last week to Chapman & Horn, of San Fran-

cisco, 1,000 head of beef cattle. Some 400 head of this purchase were shipped last week from Iron Point. Cattle dealers say the beeves will dress on an average nearly 700 pounds each. This shows the effect of introducing good breeds of cattle among Nevada herds. Some years ago T. D. Parkinson, who is managing the affairs of the company, bought some short-horn Durhams from Jesse D. Carr's herds in California, and took them to the Kelly Creek Ranch. From these and their progeny the company sell a number of thoroughbred bulls annually besides improving their own herds by crossing the ordinary stock with Durhams. The graded stock, some of which are as large as thoroughbreds, thrive as well as the native breeds on the plains and mountain ranges. Last year the Kelly Creek Ranch in this county, and the I. L. Ranch in Elko County, which adjoins it, and on which the cattle were also crossed with Durhams, were consolidated under the name of the Nevada Land and Cattle Company. On these ranches the beeves purchased by Horn & Chapman were raised, and stockmen say many of them are as fine-limbed and as large in size as pure-blooded Durhams. It is also said that these improved breeds are worth from $7 to $10 a head more than ordinary cattle, and as they stand the winters and do as well on the Nevada cattle ranges as the common breeds of cattle, that ought to be a sufficient inducement for all stock-owners to improve their herds. As the price of cattle keeps up, with no prospect of a material reduction, no doubt in a few years Nevada ranges will all be stocked with improved breeds of cattle."

The climate seems especially adapted to the growth of thoroughbreds, and when epidemics come the cattle can be driven to the mountains for safety.

It is quite impossible to obtain accurate figures showing amount of beef exported from the State for a given period, but, in order that some idea of this interest may be formed, I will say that on the 1st of December last it was estimated by cattlemen that there was about 35,000 head of beef cattle, which would average about 700 pounds each dressed, available for the winter season.

The price per pound is 7¼ to 8 cents. During one week in the month of January, 1885, there were shipped from Winnemucca, a station on the Central Pacific road, to California, 100 cars of beeves, averaging 19 head per car, making a total of 2,014 beeves.

The principal markets for beef are San Francisco and Chicago, being transported over the Central Pacific Railroad and connecting lines, where it commands the highest market price.

HUMBOLDT EXPORTS.

Through the courtesy of J. A. McBride, the obliging agent of the Central Pacific Railroad at this place, we are enabled to give the following statement of the shipments of beeves, horses, wool, and fruit from Winnemucca during the year 1884, which is compiled from the railroad books: Of beef cattle there were shipped to San Francisco, 13,290 head; to Oakland stock-yards, 3,624; to San José, 1,270; to Merced, 1,053; to Suisun, 994; to Sacramento, 381; to Athlone, 375; to other points, 295; making the total shipments of beef cattle 21,282 head. There were shipped during the last year 341 horses, mostly to California. The wool shipments amounted to 309,375 pounds, of which 278,451 pounds were shipped direct to Boston and Philadelphia, and 31,284 pounds to San Francisco. The shipment of green fruit is a new industry, and amounted during the summer and fall to 1,055 boxes, aggregating 62,495 pounds.

The cattle shipments in 1880 aggregated 21,302 head; in 1881, 29,382 head. This was exclusive of 1,600 dressed beeves shipped by the Refrigerator Company, and about 2,300 calves. In 1882 the cattle shipments aggregated 20,975 head, exclusive of 1,200 dressed beeves, shipped by the Refrigerator Company; in 1883 the cattle shipments aggregated 18,744.

In 1881 the wool shipments aggregated 227,127 pounds; in 1882, 349,585 pounds; in 1883, 400,575 pounds.

IRRIGATION.

Vast areas of land in the State need only water to be made productive and transform what is now apparently a barren waste into valuable farms. Several prominent cattle firms are at present irrigating large tracts of heretofore unproductive land with surprising results, having extensive reservoirs and canals. It is necessary for them to own large tracts for grazing purposes, and the best portions are being turned into created pastures. Whenever the test has been made and water has been brought from the mountains to the valleys by means of ditches and pipes or brought to the surface by artesian wells, the hitherto non-productive soil has literally blossomed with grain, fruits, grasses, and cereals of every description. Strikingly is this illustrated by riding along through Humboldt County, on the Central Pacific Railroad, when, after traversing hundreds of miles of a barren, dreary country the traveler emerges from the car to find himself gazing upon beds of roses, fruit trees of every description, luxuriant fields of grass and farm products of all kinds adorning acres of land around, while a fountain of water, drawn from the mountains beyond, is a constant reminder

of the secret cause of this beautiful oasis in the desert; notably, also, is this characteristic of the soil exhibited in Carson, Clover, Mason, Huntington, Ruby, Reese River, and, in fact, all the valleys of the State where the water has been systematically utilized.

No doubt that by means of a proper system of reservoirs a large area of Nevada could be made a garden of vegetation and the uninhabited regions dotted with towns and cities, and the waterless sage-brush plains transformed into green fields. Some general system of irrigation should be adopted, and doubtless will be, in the near future. Agitation has already commenced, and undoubtedly will continue to increase, directed to the idea of constructing large reservoirs for the purpose of holding in reserve large bodies of water for use in the dry season. Already much attention is being paid to this system of irrigation, and desirable sites for reservoirs for the storing of water are being sought after. It is evident a general system of irrigation is sadly needed, and to this end a bill was introduced during the last legislature to establish a State board of irrigation, whose business it was to be to investigate this matter and report desirable places for storing and saving water, and also to superintend the management of State canals for irrigating purposes. The object was to create a State investment whereby the waste water could be utilized on the sage-brush land at a profit to the State and to settlers, but by a local interest expressed in the bill it was defeated. A State board of irrigation doubtless will be formed, and laws enacted for the management of waterways of the State. The rivers and creeks furnish enough water to irrigate ten times the amount at present irrigated. More water is wasted by carelessness every year than is used, simply because there is no check.

A certain number of farmers unite and build a ditch from a river to irrigate their lands; an adjoining set build another for their lands, and so on until several ditches are in operation. The ditches being under separate management, conflicts ensue and damage suits follow, as one company fails to take care of its waste water, allowing it to run on to the farm of a stockholder of another company, thus wasting water that might be used to an advantage in another direction. The mill managers along the Carson River last year were complaining of the scarcity of the water, and upon examination by a committee appointed to investigate the matter it was found that while some ranchers were using the water economically others were allowing it to run to waste and receiving no benefits whatever by so doing, while still others were actually drowning out their grain to keep an unfriendly neighbor from getting his share of the water. The disposing of lands in elongated tracts along the course of a stream and forever debarring the using of that water for lands outside by another is encouraging a species of riparian rights that retards the country in its growth and settlement and puts a check on irrigation. There are now 800 irrigating ditches in the State, aggregating in round numbers 2,000, miles and successfully irrigating 150,000 acres of land. If the General Government could by persuaded to give the State all the unappropriated lands within its borders under due restrictions and proper precautions, a general system of irrigation could then be easily inaugurated, and a State now in the front rank as a producer of gold and silver bullion would soon take a similar position among the agricultural States of the Union, for it has been demonstrated beyond doubt that the lands of Nevada are sterile only because of aridity.

APPENDIX No. 27.

EXTRACTS FROM REPORT OF HON. F. A. TRITLE, GOVERNOR OF ARIZONA, FOR THE YEAR 1884.

GRAZING.

The grazing interests of the Territory have largely increased during the last year; quite extensive importations of improved breeds of cattle and horses have been made into Arizona, attracted by the unequaled advantages to be found here for the stock-owner in the mildness of the climate, the extensive ranges, the nutritious grasses, and the small amount of care required by the stock. There has been an entire absence of epidemic diseases among cattle and horses in this Territory, and the percentage of loss per year is stated to be about 3 per cent., being less than any other portion of the United States.

Much of the 60,000 square miles of grazing lands in Arizona, though bountifully covered with rich grasses, cannot be utilized at present for grazing purposes on account of the absence of water. It is believed, however, that this drawback can be largely, if not almost completely, remedied by the introduction of artesian water. In fact, where the experiment has been tried, in Sulphur Spring Valley, Cochise County, the result is most satisfactory, "sufficient water having been obtained in this way to water at least 30,000 cattle, besides affording sufficient irrigation to maintain the gardens that a population attending to this stock would require, and perhaps tree plantations for the relief of stock from sun and wind." (*Vide* report of commission appointed to examine and report upon artesian wells in Sulphur Spring Valley.)

The importance of this question of obtaining water by artesian-well process throughout the Territory where superficial streams are not sufficient to maintain stock, much less for agricultural purposes, is apparent.

Should all of the grazing land in the Territory be made available in this way it is estimated that there would be ample pasturage for five million cattle.

There are now in the Territory about three hundred thousand head of stock, with probably good pasturage, under present conditions, for one million more. During the prevalence of the Texas cattle fever last summer much apprehension was felt among stockmen that the disease might be communicated to the cattle of this Territory, and the question of establishing a quarantine against the admission of cattle from Texas was raised. The acting governor, at the earnest request of prominent cattlemen, issued a proclamation interdicting the admission of Texas cattle into the Territory for a limited period, thereby relieving the apprehension of contagion.

Upon examining this subject I find no provision of law covering such a question, and I would respectfully invite the attention of Congress to this matter, and suggest that authority of law be provided for establishing in the Territories quarantine restrictions should similar need arise.

AGRICULTURE.

The agricultural advantages of Arizona are, I think, generally underestimated abroad. There is no more productive soil in America than is to be found in the valleys of Arizona, and it is believed that a greater variety of productions can be raised here than elsewhere in the United States, providing water can be had for irrigation. Not only does the soil produce fine crops of cereals, but fruits of all kinds, and vegetables of the finest quality.

The yield per acre of wheat and barley is from 25 to 35 bushels, and after this is harvested corn can be planted on the same ground, and a fine crop raised the same season. Apples, peaches, pears, plums, figs, quinces, apricots, and nearly every other variety of fruit yield largely. Lemons, oranges, and olives can be raised with profit, and finer grapes cannot be produced anywhere. Sugar-cane and cotton have also been grown successfully.

In the valleys of Salt River and Gila River alone there are 400,000 acres, which can be brought under cultivation, although less than 50,000 acres are now being made productive. The principal lands now under cultivation in the Territory are confined

to the two valleys above named and the valleys of the Verde, Santa Cruz, and San Pedro. Yet there are numerous fertile valleys throughout the Territory in every direction where considerable farming is done, among which may be named the Sulphur Spring and San Simon Valleys, in Cochise County; Williamson, Peeples, Chino, Aqua Fria, Skull, Kirkland, and Walnut Grove Valleys, in Yavapai County; the valley of the Little Colorado, in Apache County; and the fertile bottom lands of the Colorado and Lower Gila, in Yuma County.

Although most of the farming lands of Arizona are confined to the valleys and the bottom lands of the principal rivers, there are millions of acres among the hills and on the plains which could be made very productive if there was sufficient water for irrigation.

Irrigation is necessary to insure good crops in nearly every locality, although in a few of the northern valleys the subirrigation is sufficient from the rainfall during the wet season. Latterly special attention has been given to irrigation propositions.

In the Salt River Valley an immense canal is being constructed which will convey water enough, it is claimed, to reclaim at least 100,000 acres, besides furnishing motive power for an immense amount of machinery. With the 35,000 acres already under cultivation, when this canal is ready for use, which it is expected to be early in the spring of 1885, this valley will present as valuable and productive an acreage of farming land as any area of equal extent in America.

The possibilities for the immigrant in this and the adjacent valley of the Gila are wonderful. Land can be had reasonably cheap; "that which has not been improved can be had at from $5 to $10 per acre; improved land from $15 to $30 per acre, according to the character of soil and location. This price includes a water-right sufficient for crop-raising." (Hamilton's Resources of Arizona.)

In connection with agricultural pursuits, hog-fattening and pork-packing bids fair to become, ere long, an exceedingly profitable business. But little work is required in fattening; the hogs run on the alfalfa fields and keep in good order until the grain is harvested, and they are then turned upon the grain stubble-fields to complete the process of fattening. "The pork is solid, sweet, and finely flavored, and disease is unknown."

When the large canal in Salt River Valley is completed, ice can be cheaply manufactured by water-power, and pork-packing engaged in on a large scale.

In reference to the benefits of the canal to the Territory the following quotations from the prospectus of the canal company for 1884 are instructive:

WATER-POWER.

The water power is formed by a vertical fall of 15 feet of the entire body of the canal, made in solid rock, at a point about 8 miles northwest of Phœnix. The amount of power produced is 1,300 horse-power. This power will be of great value in this country, where fuel is scarce and expensive. It will be utilized to its full capacity. Flour for all of Arizona, Western New Mexico, Eastern California, and Sonora will be made here; ice for the use of the city and to refrigerate large rooms for dairy purposes, and pork and beef packing, and fruit and beef canning. It will also be used for quartz mills for the reduction of ores and for other purposes.

WATER SUPPLY.

The water in Salt River, from which this canal takes its supply, is found by measurement in the dry season of the year to be sufficient to fill the canal and supply such other canals as have been heretofore constructed.

It is the best supplied stream of water in the southwestern part of the United States. The canal is taken out the Salt River three-fourths of a mile below its junction with the Verde River. These two streams receive the total southern drainage of the high mountain ranges, extending for 200 miles through the northern and central part of Arizona. These mountains cover an area of 15,000 square miles, and some of them are 12,000 feet high. They receive heavy falls of snow in winter and of rain in summer, and are covered with a heavy growth of pine timber.

LAND RECLAIMED.

This canal reclaims fully 100,000 acres of land. This land is deep alluvial soil of surpassing fertility. The surface is remarkably even, being free from elevations and depressions, with an even grade of about 10 feet to the mile from the foot-hills to the river, rendering it perfectly adapted for irrigation. It is the one garden spot of Arizona.

AGRICULTURAL PRODUCTS OF THE VALLEY.

There are now in cultivation 35,000 acres under existing canals. The most profitable cereals are wheat, barley, and oats. The yield this year is estimated at 34,000,000

pounds. The wheat produced here is of extra fine quality, and makes a superior flour. The market for these productions comprises a radius of 400 miles of surrounding country.

The average yield of wheat per acre is fully 1,500, and 2,000 is not unusual. The cost of raising and marketing at Phœnix per cwt. is about 65 cents, and the average market price $1.60.

The means of watering crops being in the hands of the farmer, and with no frosts to interfere, the yield is very certain. There has not been a failure of crops in this valley since its settlement, thirteen years ago.

It is a notorious fact that in all countries lands that are supplied by water for irrigation rate at more than double the value of those lands that depend on rainfall, and this is owing to the larger crops produced and the greater certainty of crops on irrigated lands. In some countries—Spain, for instance—this disparity is even greater, the value of irrigated lands being more than three times that of other agricultural lands.

LIVE STOCK.

Alfalfa grows luxuriantly all the year and produces five crops per annum of from 1½ to 2 tons per acre each. It will sustain in pasture an average of three head of cattle per acre, and cattle raised on this alfalfa will weigh as much at two and one-half years old as those on the ordinary wild ranges at three and one-half.

Timothy, clover, and millet can be successfully raised, but alfalfa, being of a more rapid growth and excellent for hay and grazing, is considered by the old residents more profitable, and for dairy purposes it is unexcelled. With cheap power for manufacturing ice for creameries and cheese factories, dairying will become an extensive and profitable business. In Arizona alone 500,000 pounds of creamery butter can be sold annually at 50 cents per pound. It is now difficult to secure good butter in the Territory at any price, and fair ranch butter often sells at 75 cents.

The cost of raising hogs on alfalfa does not exceed 2 cents per pound. There was shipped into Arizona last year 2,000,000 pounds of bacon, at a cost of 18 cents per pound—$360,000—and the demand is rapidly increasing. Now, with our facilities for packing in the summer season, by means of the proposed ice-chilled rooms, this supply will, in a few years, all come from Salt River Valley. And, in addition to Arizona, we will supply Sonora, New Mexico, and Eastern California.

LAND GRANTS.

The present uncertainty existing regarding the final disposition of lands granted to the Atlantic and Pacific and Texas Pacific Railroads by Congress is preventing the settlement of Arizona to a great extent, and keeping from the Territory much capital that would be invested here could a title to these lands be obtained.

I most urgently present the fact that a determination by Congress of the question whether the railroads or the Government own the lands referred to, and the opportunity given citizens to acquire title from either one or the other of these sources, will be of incalculable benefit to Arizona.

ARTESIAN WATER.

I most earnestly suggest an appropriation by Congress to defray the expense of sinking artesian wells in several of the higher valleys of Arizona. Hundreds of thousands of acres of land which would be exceedingly valuable for grazing and in many instances agricultural purposes, if water could be obtained, are now comparatively without value to the Territory or the Government. Since my last report was rendered several artesian wells have been bored successfully by private enterprise in some of the valleys of the southern portion of the Territory where the altitude is not great, and an ample flow of water obtained at a very moderate depth.

The legislature of the Territory in 1875 offered a reward of $3,000 to the person first finding a flowing stream of water by means of a genuine artesian well. This reward was claimed in November, 1883, by Mr. W. J. Sanderson, of Sulphur Spring Valley, Cochise County, Arizona; and in order to determine the justice of his claim I appointed a commission of highly competent gentlemen, consisting of Hon. E. B. Gage, Prof. John A. Church, and Isaac E. James, esq., to examine and report upon the wells bored by Mr. Sanderson. The following is an extract from their report:

First. That flowing water has been obtained in Sulphur Spring Valley by boring.

Second. That the wells which furnish it are true artesian wells, in that they derive their supply from subterranean sources distinct from the surface by an impervious stratum, in this case clay 20 to 40 feet thick.

Third. That each of these wells inspected by them throws out water enough to supply 5,000 to 10,000 head of stock, and therefore is an important addition to the resources of the Territory.

Fourth. That the finding of the water is not accidental and doubtful, but is quite as regular and certain as can be expected of such enterprises.

Fifth. That no reasonable doubt exists of the possibility of carrying the same system of improvement into other valleys of Arizona and thus greatly extending her means of industry.

The deepest well bored was 83 feet. Mr. Sanderson's success stimulated others, and several other wells are reported in operation in the southern portion of the Territory, notably one near Florence, in Pinal County.

This is a subject of the utmost importance to the progress of Arizona, and the assistance of Congress is desired in demonstrating the feasibility of developing water on the uplands and higher valleys of the Territory, where great depth is required and the experiment is too expensive for poor settlers, and where under existing laws no inducement is offered to the rich to reclaim land by this means.

The Government still owns nearly all the table land of Arizona, and if water were procured on these uplands by artesian process the results would far more than repay the expense and the benefit to the Territory be very great.

APPENDIX No. 28.

STATEMENTS FURNISHED BY MR. ALBERT FINK, CHAIRMAN OF THE JOINT EXECUTIVE COMMITTEE OF EAST AND WEST TRUNK LINES, IN REGARD TO LIVE-STOCK SHIPMENTS FROM THE WEST TO THE EAST.

[Joint Executive Committee, office of the chairman, 346 Broadway.]

NEW YORK, *February* 26, 1885.

DEAR SIR: In compliance with your request of the 18th instant, I herewith inclose two statements of live-stock shipments:

First. Statement No. 233, E. B., showing the number of tons of cattle received at New York City, Philadelphia, Baltimore, and the New England States during 1880, 1881, 1882, 1883, and 1884, including all cattle shipped from the West which cross the Hudson River, and south of Saint Johns. Please understand that these are the arrivals at the seaboard of cattle from all parts of the country. The origin of shipments appears on the statement. Some of the cattle originated in New York State, some in Pennsylvania, some in New Jersey, some in Virginia, and some in Maryland. You can, from this statement, make out the cattle shipments from Western points, but we have no information showing where the shipments came from beyond Chicago or Saint Louis.

The same statement shows the dressed-beef shipments. You will notice that this traffic has been increasing, particularly to New England, since the year 1880; and this, of course, may account for the decrease in the shipments of live cattle, although there has been a general increase in the shipments to New England.

You will also bear in mind that these figures include all export shipments, which in some years are greater than in others. We have no statistics showing the export of cattle, but I suppose you can obtain that from other sources.

The weight of the live cattle will average about 1,200 pounds per head, and 100 pounds of live cattle, gross, will make about 57 pounds of dressed beef.

In the year 1884 the Delaware, Lackawanna and Western carried about 5 per cent. of the cattle to New York, which is not included in this table, and this will account for the decrease in the shipments as compared with the previous year.

Second. Statement No. 234, E. B., showing the cattle shipped in the years 1880 to 1884, from Chicago, Saint Louis, Indianapolis, and Cincinnati, of which we have accounts. The first total in the table shows the shipments to New York City, Philadelphia, Baltimore, and New England points. The shipments enumerated under "Other States" were made to interior points. For example, in 1880 the shipments from Saint Louis to Illinois were 16,823 tons, of which 13,000 tons went to Chicago, and the balance to interior points in Illinois. The 31,549 tons shipped from Chicago to Indiana in the year 1880, and the corresponding number of tons shipped in the subsequent years, go to a slaughtering establishment at Hammond, Ind., and are there made into dressed beef and shipped east. The dressed beef so shipped is included in Statement No. 233. The dressed beef arriving at the sea-coast is also included in the table of dressed-beef shipments contained in Statement No. 233.

You will notice that large shipments of cattle are made to interior points in the States of New York and Pennsylvania. This is partly for home consumption, but a large portion of this stock is fed in those States, and afterwards shipped to the seaboard; and that which goes to the seaboard would be included in Statement No. 233. The shipments to Buffalo, locally, are included in the New York State shipments, and all that is not consumed there, of course, comes east.

I hope this information is what you desire.

Respectfully, yours,

ALBERT FINK,
Commissioner.

JOSEPH NIMMO, Jr., Esq.,
Chief of Bureau of Statistics, Washington, D. C.

Special statement No. 233, E. B., showing cattle received at New York City, Philadelphia, Baltimore, and the New England States from points west thereof during 1880, 1881, 1882, 1883, *and* 1884.

Points of origin.	New York City.					Philadelphia.				
	1880.	1881.	1882.	1883.	1884.	1880.	1881.	1882.	1883.	1884.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Chicago	243,569	259,906	260,634	247,686	173,553	20,585	27,539	32,406	24,034	19,558
Saint Louis	45,107	48,960	21,524	32,114	37,981	6,241	8,522	4,123	6,674	6,317
Peoria	1,703	2,418	507	2,698	1,033	169	608	.....	159	.....
Indianapolis	1,991	2,060	1,832	5,205	6,085	170	60	199	90	21
Cincinnati	26,512	25,779	18,621	23,895	24,349	1,340	2,480	1,734	1,220	255
Buffalo	34,620	15,574	17,467	15,509	18,556	.....	2,550	3,400	4,336	3,264
Pittsburgh	14,907	13,247	9,172	14,053	8,663	7,166	4,957	4,228	3,510	1,965
Illinois	10,096	3,173	537	105	.....	.....	.....	.....	.....	.....
Iowa	680	.....	.....	.....	.....	.....	.....	.....	.....	.....
Indiana	4,884	2,156	2,091	2,277	2,094	101	267	12	10	.....
Michigan	110	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ohio	15,360	11,417	9,199	16,093	13,839	6,476	5,351	4,623	2,648	3,105
Kentucky	6,608	2,635	6,606	3,635	3,403	3,573	1,901	2,303	2,406	2,947
New York State	5,171	3,619	3,758	6,051	6,939	363	100	40	.....	50
Pennsylvania	2,231	4,323	5,070	9,251	14,727	16,268	16,546	12,248	18,181	17,910
New Jersey	100	.....	40	193	347	.....	.....	.....	.....	.....
West Virginia	6,737	2,380	2,332	2,976	4,050	19,528	11,600	14,420	11,632	11,150
Virginia	470	290	5,849	9,014	9,912	1,693	1,460	8,642	8,337	6,393
Maryland and South	.....	.....	1,250	1,341	2,092	4,116	230	1,316	4,659	7,638
Grand total	420,856	397,937	366,489	392,096	328,223	87,789	84,171	89,694	87,905	80,573
DRESSED BEEF.										
Chicago	.....	.....	2,531	16,325	34,916	.....	.....	448	8,601	12,805
Saint Louis	.....	.....	10	33	20	.....	.....	.....	.....	10
Buffalo	.....	.....	92	.....	10	.....	.....	.....	.....	.....
Ohio	.....	.....	.....	7	.....	.....	.....	.....	.....	.....
New York	.....	.....	.....	.....	9	.....	.....	.....	.....	.....
Total	.....	.....	2,633	16,365	34,955	.....	.....	448	8,601	12,815

Points of origin.	Baltimore.					New England States, including Boston.				
	1880.	1881.	1882.	1883.	1884.	1880.	1881.	1882.	1883.	1884.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Chicago	4,193	4,456	4,243	8,106	5,843	28,239	106,386	53,077	78,373	55,343
Saint Louis	2,063	2,166	897	522	248	4,399	22,062	7,936	12,860	7,191
Peoria	190	.....	.....	447	77	.....	31	.....	.....	.....
Indianapolis	.....	.....	.....	.....	31	277	353	510	280	.....
Cincinnati	440	873	1,273	221	201	260	226	80	151	205
Buffalo	540	530	490	106	2,150	6,760	4,769	6,024	2,104	8,753
Pittsburgh	20	63	504	37	44	.....	.....	.....	36	309
Illinois	.....	.....	.....	.....	.....	.....	271	206	176	293
Indiana	.....	.....	.....	.....	182	130	140	180	.....	.....
Michigan	.....	.....	.....	.....	.....	10	32	30	.....	.....
Ohio	1,195	3,370	3,101	3,342	3,463	1,701	2,825	1,074	5,076	.....
Kentucky	11	90	22	.....	.....	.....	.....	.....	.....	.....
Tennessee	189	252	.....	.....	.....	.....	.....	.....	.....	.....
Canada	.....	.....	.....	.....	.....	10	255	4,980	490	90
New York State	.....	.....	.....	.....	.....	1,253	3,230	2,201	1,366	2,257
Pennsylvania	1,059	1,158	503	906	1,269	23	91	109	87	64
New Jersey	.....	.....	.....	.....	.....	.....	10	3	.....	.....
West Virginia	3,561	7,401	4,409	4,390	6,111	.....	.....	.....	.....	.....
Virginia	19,634	14,334	3,974	3,906	2,820	.....	.....	.....	.....	.....
Maryland and South	1,268	834	772	1,236	2,180	.....	.....	.....	.....	.....
Grand total	34,363	35,547	20,188	23,249	24,619	43,062	140,681	76,410	100,899	74,595
DRESSED BEEF.										
Chicago	.....	.....	879	4,149	4,181	15,680	75,259	87,970	116,737	120,922
Saint Louis	.....	.....	.....	.....	101	.....	.....	1,180	10	72
Buffalo	.....	.....	.....	.....	.....	.....	.....	.....	.....	11
Illinois	.....	.....	.....	.....	.....	.....	.....	.....	.....	10
West Virginia	.....	.....	.....	9	.....	.....	.....	.....	.....	.....
Total	.....	.....	879	4,158	4,282	15,680	75,259	89,150	116,747	121,015

Special statement No. 234, E. B. showing cattle from and via Chicago, Saint Louis, Indianapolis, and Cincinnati, forwarded east thereof during 1880, 1881, 1882, 1883, and 1884.

1880.

Destination.	Chicago.	Saint Louis.*	Indianapolis.*	Cincinnati.*	Total.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
New York City	222,262	47,070	3,102	28,315	300,749
Philadelphia	19,280	4,220	190	376	24,066
Baltimore	4,053	1,120	.....	400	5,573
New England.					
Boston	81,914	35,840	.....	140	.....
Portland	655	.....	.....	.....	.....
Vermont	10	.....	.....	.....	.....
Massachusetts	21,367	.....	.....	.....	.....
Connecticut	1,783	.....	.....	.....	.....
Rhode Island	21,331	.....	.....	.....	.....
Total New England	127,060	35,840	.....	140	163,040
Other States.					
Illinois	.....	16,823	.....	.....	.....
Michigan	3,006	810	.....	.....	.....
Canada	23	.....	.....	.....	.....
Indiana	31,549	1,290	30	.....	.....
Ohio	3,358	10,100	211	1,254	.....
Kentucky	.....	20	.....	.....	.....
New York	43,272	9,850	17,172	14,100	.....
Pennsylvania	10,599	170	6,800	560	.....
New Jersey and Delaware	1,559	60	10	180	.....
Maryland and South	368	600	.....	80	.....
West Virginia	970	.....	.....	.....	.....
Virginia	.....	.....	.....	10	.....
Total other States	94,704	39,723	24,223	16,184	174,834
Grand total	467,359	127,973	27,515	45,415	668,262

1881.

New York City	265,367	40,830	6,079	26,532	338,808
Philadelphia	30,403	9,690	40	412	40,545
Baltimore	3,807	1,090	.....	974	5,871
New England.					
Boston	96,222	25,160	380	170	.....
Portland	2,392	.....	.....	.....	.....
Vermont	10	.....	.....	.....	.....
Massachusetts	1,934	.....	.....	.....	.....
Connecticut	1,068	.....	.....	.....	.....
Rhode Island	6,618	.....	.....	.....	.....
Total New England	108,244	25,160	380	170	133,954
Other States.					
Illinois	.....	19,435	.....	.....	.....
Michigan	2,856	760	.....	.....	.....
Canada	55	.....	.....	.....	.....
Indiana	51,414	3,070	34	.....	.....
Ohio	6,247	16,530	140	3,677	.....
Kentucky	.....	60	.....	.....	.....
New York	25,081	17,470	6,699	8,200	.....
Pennsylvania	19,703	14,930	8,536	703	.....
New Jersey and Delaware	1,017	10	.....	218	.....
Maryland and South	162	180	.....	180	.....
West Virginia	1,148	.....	.....	.....	.....
Virginia	.....	.....	.....	2	.....
Total other States	107,683	72,445	15,409	12,980	208,517
Grand total	515,504	149,215	21,908	41,068	727,695

* Excluding cattle from Saint Louis and Chicago.

Special statement No. 234, E. B., showing cattle from and via Chicago, &c.—Continued.

1882.

Destination.[1]	Chicago.	Saint Louis.	Indianapolis.	Cincinnati.	Total.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
New York City	257,283	19,867	3,936	27,806	308,892
Philadelphia	36,137	3,350	12	420	39,919
Baltimore	5,085	891	10	946	6,932
New England.					
Boston	56,389	9,990	910		
Portland	115				
Massachusetts	10				
Connecticut	21				
Rhode Island		20			
Total New England	56,535	10,010	910		67,455
Other States.					
Illinois		23,357			
Michigan	3,785	2,363			
Indiana	56,218	7,771	80		
Ohio	10,744	18,604	380	3,776	
New York	30,826	20,930	13,158	2,024	
Pennsylvania	30,790	6,595	8,846	1,598	
New Jersey and Delaware	1,664		10	198	
Maryland and South	2,021			60	
West Virginia	1,162				
Total other States	137,210	79,620	22,474	7,656	246,960
Grand total	492,250	113,738	27,342	36,828	670,158

1883.

New York City	238,828	30,286	5,060	25,411	299,585
Philadelphia	20,225	8,712	76	198	29,211
Baltimore	8,167	593		130	8,890
New England.					
Boston	75,689	15,735	280	186	
Portland	983				
Massachusetts	10			10	
Connecticut	10				
Total New England	76,692	15,735	280	196	92,903
Other States.					
Illinois		19,150			
Michigan	5,364	3,891			
Canada	10				
Indiana	81,094	3,879	23		
Ohio	9,871	20,955	542	3,774	
Kentucky		20			
New York	36,562	18,945	11,565	751	
Pennsylvania	25,495	14,345	7,242	1,599	
New Jersey and Delaware	1,558			174	
Maryland and South	3,051	320		31	
West Virginia	5,909				
Total other States	168,914	81,505	19,372	6,329	276,120
Grand total	512,826	136,831	24,788	32,264	706,709

1884.

New York City	191,736	57,227	7,406	26,408	282,777
Philadelphia	15,759	7,398		132	23,289
Baltimore	6,211	255	20	257	6,743

Special statement No. 234, E. B., showing cattle from and via Chicago, &c.—Continued.

1884.

Destination.	Chicago.	Saint Louis.	Indianapolis.	Cincinnati.	Total.
New England.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Boston	54,845	7,532	20	190	
Portland	163				
Rhode Island	988			1	
Total New England	55,996	7,532	20	191	63,739
Other States.					
Illinois		36,742			
Michigan	2,518	6,310			
Indiana	95,057	2,446	53		
Ohio	7,187	18,604	525	1,960	
Kentucky		60			
New York	16,996	9,650	9,995	127	
Pennsylvania	18,589	8,406	3,948	958	
New Jersey and Delaware	584			53	
Maryland and South	1,296	10		10	
West Virginia	3,243				
Total other States	145,420	82,228	14,521	3,108	245,277
Grand total	415,122	154,640	21,967	30,096	621,825

APPENDIX No. 29.

LETTER ADDRESSED TO THE CHIEF OF THE BUREAU OF STATISTICS BY HON. JAS. F. MILLER, M. C., OF TEXAS, IN REGARD TO THE RELATIVE ADVANTAGES OF MOVING TEXAS CATTLE TO NORTHERN RANGES BY TRAIL AND BY RAIL.

HOUSE OF REPRESENTATIVES,
Washington, D. C., February 6, 1885.

MY DEAR SIR: Your favor of January 5, transmitting statement of the Missouri Pacific Railway system in relation to transportation of cattle is received, and as I think the statements made require some correction, I will therefore state briefly these points of difference:

1. I think the universal experience of cattlemen warrants me in saying that driving cattle (young or old) by trail, when grass and water can be had, is much cheaper than shipping by rail.

2. That cattle driven by trail arrive at their destination in much better condition than when shipped by rail. In fact, cattle driven by trail improve very much during the drive if properly handled.

3. That the losses in driving by the trail are much less than when shipped by rail.

4. That cattle driven over a regular trail, properly handled, become acclimated during the drive and are not liable, upon arrival at distributing centers, to communicate the cattle fever, while those shipped by rail must be quarantined during about the same period required to complete the drive to acquire this immunity, and at nearly as much expense as is required to complete the drive.

5. The railroad facilities and rolling-stock are not yet sufficient to enable them to handle the Texas cattle shipment in the time required within which the cattle must be gathered on the ranges (after spring opens) and delivered by June or July, so as to be able to get sufficient flesh to stand the winter.

These positions are, in my judgment, fully sustained by the experience of cattle drivers; and I may say further, that only those cattle are shipped by rail (except beef cattle for slaughter) which are so situated that it is not practicable to drive them by the trail.

Very respectfully,

JAS. F. MILLER,
Member Congress Eighth District, Texas.

JOSEPH NIMMO, Jr.,
Chief of Bureau of Statistics.

APPENDIX No. 30.

A BILL TO ESTABLISH A QUARANTINED LIVE-STOCK TRAIL, AND TO REGULATE COMMERCE BETWEEN THE STATES AS TO LIVE STOCK—INTRODUCED IN THE HOUSE OF REPRESENTATIVES JANUARY 17, 1885, BY HON. JAMES F. MILLER, M. C., OF TEXAS.

A BILL to establish a quarantined live-stock trail, and to regulate commerce between the States as to live stock.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior be, and is hereby, directed to appoint, as soon as practicable, three commissioners whose duty it shall be to lay out and establish, by metes and bounds, a public highway to be known as a quarantined national live-stock trail, for the purpose of driving cattle, horses, sheep, hogs, or other live stock to market or from one location to another, and, further, to establish, by metes and bounds, at convenient points on said trail, suitable quarantined grazing-grounds where said live stock may be held and grazed for short periods during the drive.

SEC. 2. That said quarantined national live-stock trail shall begin on Red River, as near the one hundredth degree of longitude as may be deemed practicable for the purpose of this act; thence running in a northerly and westerly direction through the Indian Territory, following as far as may be practicable the present trail known as the Fort Griffin and Dodge City trail, to the southwest corner of the State of Kansas; thence over the unappropriated public lands belonging to the United States, in a northerly direction, on the most practicable route, to the north boundary line of the United States.

SEC. 3. That said quarantined national live-stock trail may be of any practicable width not exceeding six miles, and said quarantined grazing-grounds shall not exceed twelve miles square at any one place.

SEC. 4. That the unappropriated public lands upon which said quarantined national live-stock trail and grazing-grounds may be established shall be, and are hereby, withdrawn and withheld from sale, location, or settlement, and are set apart for the exclusive purposes of said trail and quarantine grounds for the term of ten years from the passage of this act.

SEC. 5. That as soon as said commissioners shall have laid out and designated said trail in accordance with the provisions of this act, they shall make a report thereof to the Secretary of the Interior, fully defining said trail; and if such report shall be approved by the Secretary of the Interior, he shall cause the same to be recorded in the General Land Office of the United States, and shall at once give public notice of the establishment of said trail by causing publication thereof in some newspaper published at the capitals of the States of Missouri, Kansas, Texas, Colorado, and Nebraska.

SEC. 6. That the sum of ten thousand dollars, or so much thereof as may be necessary, is hereby appropriated, out of any money in the Treasury not otherwise appropriated, for the purpose of paying the expenses of carrying out the provisions of this act, subject to the draft of the Secretary of the Interior.

APPENDIX No. 31.

STATEMENT BY MR. GEORGE OLDS, GENERAL TRAFFIC MANAGER OF THE MISSOURI PACIFIC RAILWAY SYSTEM, UNDER DATE OF DECEMBER 24, 1884, IN REGARD TO THE SHIPMENT OF CATTLE NORTH BY RAIL.

Two years ago it was not thought practicable to move young cattle from the breeding lands in Southern Texas, adjacent to the Gulf of Mexico, the drive over the old land trails being considered the cheaper means of removing the young stock to the grazing lands in Western and Northern Texas and the Indian Territory. This subject engaged the attention of Mr. Gould, our president, in April, 1883, and efforts were at once made to test the practicability of moving this class of live stock by rail from Laredo and other points on our southern lines to Northern Texas, especially to the Pan Handle, so called. Our efforts were rewarded with success, we having carried from Southern Texas points, since April, 1883, to Fort Worth and points west on the Rio Grande division and to Wichita Falls, the northern terminus of the Fort Worth and Denver City Railroad, from which point the stock took the land trail to Northwestern Texas, over 100,000 head of young cattle, and, as showing what the possibilities are, we carried several thousand head from Southern Texas to points as far north as Ogalalla, on the Union Pacific Railroad.

The old method of driving cattle overland is slow and tedious and always results in landing the stock in Nebraska and Dakota in a weak and exhausted condition; while that which we carried by rail was landed in five days' total time from date of loading, the distance hauled being, in round numbers, 1,400 miles, the drive over the same distance usually occupying six weeks' time. It has been stated by some of those who shipped by rail that the saving of interest on cost and the superior weight and condition of the stock when unloaded from trains went very far towards equalizing the excess cost of rail transportation over cost of driving overland. While this feature of railroad traffic is in its infancy in Texas, yet I am sanguine of the ability of the railroads to successfully compete with the old method of overland driving. In this respect it will appear the railroads of Texas, especially the Missouri Pacific system, is becoming a most valuable means of rapidly developing the enormous cattle resources of the State of Texas.

The question of overcoming the objections of the citizens of the Northwestern States, whose herds may be affected by the introduction of Texas cattle carried by rail direct from the extreme southern districts, is now engaging the attention of some of the railroad managers, and a plan of acquiring large tracts of land in Nebraska and Dakota, upon which the cattle carried by rail may be held in quarantine a sufficient length of time to acclimatize and get them into such condition as will remove all danger of spreading fever, is one which presents itself. The important features in connection with this plan are: Can land be had for this purpose, and are the profits to the railroad carrier likely to be such as to justify the cost of acquiring it?

APPENDIX No. 32.

STATEMENT FURNISHED BY MR. GEORGE OLDS, GENERAL TRAFFIC MANAGER OF THE MISSOURI PACIFIC RAILROAD SYSTEM, IN REGARD TO THE MOVEMENT OF CATTLE BY RAIL FROM TEXAS TO POINTS NORTH OF THE STATE OF KANSAS.

TREASURY DEPARTMENT,
BUREAU OF STATISTICS,
Washington, D. C., January 26, 1885.

DEAR SIR: Will you be so kind as to have a statement prepared for me showing the number of cattle which you have transported each year from Texas to the Northwest by rail?

I am, sir, very respectfully, yours,

JOSEPH NIMMO, JR.,
Chief of Bureau.

GEORGE OLDS, Esq.,
General Traffic Manager,
Missouri Pacific Railway Company,
St. Louis, Mo.

THE MISSOURI PACIFIC RAILWAY COMPANY,
OFFICE OF GENERAL TRAFFIC MANAGER,
Saint Louis, Mo., March 7, 1885.

DEAR SIR: Referring to your request of January 26, I beg to inclose herewith such information as I have been enabled to obtain from our general auditor relative to the movement northward of Texas cattle.

I regret that we cannot give the information in a more complete form. I also regret the delay in finally replying to your request, which has been entirely owing to pressure of business incidental to the preparation of the annual reports of this company.

You will observe that Mr. Warner's statement includes only such cattle as were moved by all rail to points north of the State of Kansas. The stock cattle (so called) moved by all lines from Southern Texas points to Wichita Falls amounted to 150,018. Besides this there were moved from Southern Texas points to points west of Fort Worth, on our Rio Grande division, about 200 head.

Yours, truly,

GEO. OLDS,
General Traffic Manager.

JOSEPH NIMMO, Esq.,
Chief Bureau of Statistics,
Washington, D. C.

THE MISSOURI PACIFIC RAILWAY COMPANY,
ACCOUNTING DEPARTMENT,
Saint Louis, Mo., March 6, 1885.

DEAR SIR: Referring to your favor of the 7th ultimo, in regard to statement, for Mr. Joseph Nimmo, of cattle transported via our line from Texas to the Northwest, I inclose to you herewith a memo. statement for the year 1884, that being the only year during which we had through billing arrangements, and to go any further back would necessitate going through the local billing.

Trusting that this will be satisfactory, and returning all correspondence to you, I remain,

Yours, truly,

C. G. WARNER,
General Auditor.

GEORGE OLDS, Esq.,
General Traffic Manager.

Stock from Texas to the Northwest, 1884.

[Through ways-bills via Burlington and Missouri River Railway.]

Month.	From—	To—	No. cars.
April	San Antonio	Culbertson, Nebr	11
May	Pearsall	Cambridge, Nebr	17
July	San Antonio	Culbertson, Nebr	19
September	do	do	6
			53

[Through way-bills via Union Pacific Railway.]

April	Fort Worth	North Platte, Nebr	4
Do	Taylor	Kearney, Nebr	8
May	Victoria	Brady Island, Nebr	50
Do	do	Ogallala, Nebr	34
Do	San Antonio	do	97
June	Denison	do	32
Do	Forth Worth	do	21
			246

[Billed locally via Papillion.]

June	San Antonio	Fremont, Nebr	5
July	do	Kearney, Nebr	3
Do	do	Madison, Nebr	2
Do	do	Schuyler, Nebr	4
Do	Fort Worth	North Loup, Nebr	2
September	San Antonio	David City, Nebr	3
			19

[Billed locally via Falls City.]

May	Houston	Culbertson, Nebr	16
Do	San Antonio	do	10
July	Cisco	Brush, Colo	38
Do	San Antonio	McCook, Nebr	7
August	do	Solem, Nebr	4
Do	do	McCook, Nebr	7
			77
			396

396 cars, at an average of 22 head per car, 8,712.

APPENDIX No. 33.

STATEMENT FURNISHED BY MR. J. F. GODDARD, TRAFFIC MANAGER OF THE ATCISON, TOPEKA AND SANTA FÉ RAILROAD, IN REGARD TO THE TRANSPORTATION OF TEXAS CATTLE TO NORTHERN RANGES BY RAIL.

TOPEKA, KANS., *February* 21, 1885.

DEAR SIR: Your favor of the 13th to our general manager has been handed to me for reply.

Mr. Robinson wired you on the 13th as follows: "First shipment of Texas cattle from El Paso by rail over our road was made in 1884, in which year we moved about 30,000 head. With no unfavorable legislation we will probably move 75,000 head in 1885."

In answer to the latter clause of your letter, I have talked with several experts as to the danger of increasing or developing Texas fever by the movement of these cattle by rail as compared with the drive. It has been a much-discussed question as to what Texas fever is. Our best veterinarians differ on the subject. It is a well-established fact, however, that native cattle have taken the disease from passing over ground which had been previously passed over by Texas cattle, although several months may have elapsed between the time of passage of the two herds. From this it is supposed that the disease is propagated by a germ deposited either through the feet or mouth of the animals. Texas cattle themselves never have the disease; that is to say, if they contain the germs, the germs are never developed in themselves, they only having the power of communicating the disease to northern cattle. The cattle which take the disease, I am informed by the best authorities, have no power of communicating it to others. With these conditions, my judgment would be that it is altogether the safest plan of transportation for Texas cattle by rail. With proper sanitary precautions, by cleansing the cars and stock-yards where they are unloaded, before native cattle are allowed to be introduced (which was done by our company last year) will undoubtedly prevent any danger of a spread of the disease by means of shipment by rail. The only danger, then, remaining would be when the Texas cattle are turned out to graze, which danger always exists unless they are kept in separate pastures from the native stock. The advantage of shipment by rail is, I think, in the fact that in the movement from Texas to the point of unloading from the cars the country is kept entirely clear from the danger of contagion.

The Territories of New Mexico and Wyoming and the States of Colorado and Kansas have passed laws upon the subject; and it may be that such statutes will be passed as will make the shipment of Texas cattle by rail impracticable. I have not as yet investigated the subject as to whether such legislation would be constitutional as to inter-State traffic or not; but I can freely say that I believe that it would be ill advised, and work an injury to a very large industry which is an immense source of revenue to the country.

Very truly, yours,

J. F. GODDARD,
Traffic Manager.

Hon. JOSEPH NIMMO, Jr.,
Chief of Bureau of Statistics,
Washington, D. C.

TOPEKA, KANS., *February* 25, 1885.

DEAR SIR: Yours of February 20 to our general manager has been referred to me for reply.

I some days since wrote you stating that I did not believe in the theory that rail shipments of cattle increased the liability of a spread of the Texas fever; but, on the other hand, I believe the contrary is true. I stated in my previous letter the theories as to the spread of the so-called "Texas fever," that should the cattle be driven across *the country*, whatever ground they pass over is practically forbidden ground for

native cattle, as the latter are liable to contagion from passing over the same ground. Whatever objection any of our people may have raised to a trail leading northwesterly, it doubtless emanates from the idea that shipments of native cattle, located at any point west of said trail, could not be driven to the shipping point unless such point was also west of the trail, as it would be dangerous for such native cattle to cross the trail so provided. I will here say that this objection is not on the part of the railroad company, but, as I look at it, in the interest, encouragement, and improvement of live stock. Cattle occupying the larger portion of the Indian Territory, the Pan Handle of Texas, and also of New Mexico, are graded cattle; that is to say, nearly all of the cattle raisers in that country have introduced into their herds, which were originally Texans, blooded stock to raise the grade far above the average Texan. My idea is that the best interest of the whole cattle industry would be served by the movement by rail rather than by trail. In other words, I consider the cattle interests of the country to be best served by a course which will induce, rather than the contrary, the improvement of the large herds of cattle raised in our section. I think this improvement will be very much more rapid if the parties so engaged feel sure that their herds will be protected from any ravages from Texas fever.

Yours, very truly,

J. F. GODDARD.

JOSEPH NIMMO, Jr., Esq.,
Chief of Bureau of Statistics,
Washington, D. C.

APPENDIX No. 34.

LETTER ADDRESSED TO THE CHIEF OF THE BUREAU OF STATISTICS BY MR. GEORGE B. LOVING, OF FORT WORTH, TEX., IN REGARD TO THE ESTABLISHMENT OF A CATTLE TRAIL IN TEXAS.

OFFICE OF DAILY AND WEEKLY GAZETTE,
Fort Worth, Tex., February 12, 1885.

DEAR SIR: I have your favor of the 7th, for which you will please accept my thanks. I answered your telegram of the 7th, stating that a bill was now before the State legislature proposing to open a cattle trail from the Colorado River to the crossing of Red River in Wilbarger County. I have very little hope of their being able to pass this bill, at least at this session of the legislature; in fact, there is no immediate necessity for the passage of such a bill in Texas, as there is no hindrance to the passage of cattle over any section of country in this State; but unless there is an outlet furnished for Texas cattle by the establishment of a national trail through the Indian Territory and Kansas (or the removal of all obstacles to their introduction to the ranges in the Northern States and Territories), I cannot but apprehend serious injury to the stock interests of this State, as the want of such an outlet for the surplus cattle of Texas must necessarily result in a very material decrease in values.

Very respectfully, yours,

GEO. B. LOVING.

Hon. JOSEPH NIMMO, Jr.,
Chief of Bureau of Statistics,
Washington, D. C.

A BILL to provide for the establishment of a State cattle trail and to make an appropriation for defraying the expenses of the same.

Be it enacted by the legislature of the State of Texas, That there shall be laid out and established a public thoroughfare in this State, to be known and designated as the "State Cattle Trail." It shall begin at some suitable point on the Colorado River, at or near the southwest corner of Brown County, and shall run from thence as nearly as practicable on a direct line to the initial monument on the one hundredth meridian, west longitude, where the same crosses the Prairie Dog Town Fork of Red River, and from thence with said one hundredth meridian to the northeast corner of Lipscomb County. Said State cattle trail shall be, as nearly as practicable, two miles in width from said beginning point to the said initial monument, and from thence to the said northeast corner of Lipscomb County it shall be, as nearly as practicable, one mile in width, and shall be laid out and marked as hereinafter provided.

SEC. 2. The governor shall appoint three disinterested and discreet citizens of this State, to be known and designated as the "Trail Commission;" they shall receive the compensation and perform the duties required of them by this act. Before entering upon the discharge of their duties each of said trail commission shall take and subscribe an oath to the effect that he will, to the best of his skill and ability, discharge and perform all the duties required of him by this act without favor or affection, malice, or hatred, to any person. Such oath shall be filed with the secretary of state.

SEC. 3. It shall be the duty of the trail commission to lay out and direct the surveying and marking of said cattle trail in accordance with the provisions of this act, and to report their proceedings in writing to the governor. Said report shall be accompanied by a plot or map showing the location of the trail, with field notes of the survey thereof.

SEC. 4. Said State cattle trail shall not be laid out across any farm, lot, or inclosure without first obtaining the written consent of the owner, or his agent or attorney, to the same, except as hereinafter provided. If such written consent should be refused, it shall then be the duty of said trail commission to carefully examine the country round about such farm, lot, or inclosure, and see whether the trail can be so diverged from its general course as to pass round such farm, lot, or inclosure without serious incon-

venience to the public; and if such can be done, it shall be their duty to so lay it out. In cases of the kind above mentioned said trail may be narrowed down to any width less than the maximum width of two miles, provided the same shall not be less than sixty feet in width at any place. But if, after such examination, the trail commission is of the opinion that such divergence cannot be made without great and serious inconvenience to the public, it shall be their duty to lay out said trail across such farm, lot, or inclosure, but in so doing they shall confine said trail to so much ground only as shall be necessary for the purpose. In laying out the said cattle trail, if the trail commission deem it expedient, they may adopt any or all lanes or other narrow passes along the route, and may confine said trail only to such lane or other narrow pass in order to pass the same through parts of the country where, by reason of inclosures or other obstacles, it would other otherwise incur unnecessary expense to lay it out the maximum width or less.

SEC. 5. If the owner, or his agent or attorney, of any land over which said trail may be laid out shall file with said trail commission a written protest against laying out such trail across his land, it shall then be the duty of the trail commission to assess the damages to such owner and make report thereof to the governor, and said written protest shall accompany such report; whereupon it shall be the duty of the governor to direct the comptroller to draw his warrant in favor of such owner for the amount so assessed by the trail commission, to be paid out of the fund appropriated by this act, after which such trail shall be opened across such party's land.

SEC. 6. In all cases of disagreement of said trail commission upon matters relating to their duty the decision of a majority thereof shall be sufficient to govern. Each member of the trail commission shall receive from the State, as compensation for his services, the sum of five dollars per day for every day he may be actually engaged in discharging the duties required of him by this act.

SEC. 7. Said State cattle trail shall be surveyed, and posts of cedar or other durable material set up every quarter of a mile on each side thereof. Said posts shall be at least six inches in diameter, securely set at least two feet in the ground, and shall extend at least five feet above the surface of the ground; they shall each be plainly marked on the side thereof next to the trail with the words, "State Cattle Trail." The surveying and setting the posts above mentioned shall be performed under contract, to be let by the governor after due notice thereof published in some newspaper of the State for at least four weeks. It shall be let to the lowest responsible bidder, who shall be required to enter into bond, payable to the governor and his successors in office, conditioned for the faithful performance of his contract. The trail commission shall superintend, direct, and control the surveying and marking of said State cattle trail, and it shall be their duty to personally lay out the trail, and the survey shall be made and the posts set along the trail as shall be directed by the trail commission. The commissioner of the general land office shall furnish said trail commission, free of charge, with such sketches, maps, field-notes, and other information necessary in laying out, surveying, and marking said cattle trail as he may possess.

SEC. 8. All lands belonging to the State situated within the bounds of said State cattle trail shall be, and are hereby, reserved from location, sale, or lease, as long as such trail shall be open as a public thoroughfare. And it shall be unlawful for any person to erect any fence or other obstruction on or across said State cattle trail. Any person violating the provisions of this section shall be fined in any sum not less than one hundred nor more than one thousand dollars, and such obstruction shall be removed by order of the court.

SEC. 9. After the governor shall have received the report of the trail commission provided for in section three of this act, and all claims for damages reported shall be adjusted, it shall be his duty to immediately issue his proclamation, declaring such trail as surveyed and reported by the trail commission to be a public thoroughfare. Such proclamation shall be published in at least three newspapers in the State of Texas for sixty days.

SEC. 10. From and after the expiration of sixty days from the date of the governor's proclamation provided for in the preceding section, every person with cattle bred in any part of the State south of the Colorado River, who shall desire to drive the same through the northern part of this State, shall be required to drive the same upon the State cattle trail, and shall be required to keep them thereon; and it shall be unlawful for any such drover to drive or permit his cattle to stray off from the said State cattle trail until after arriving at the shipping point or passed out of the State. Any person who shall violate the provisions of this section shall be fined in any sum not less than one thousand nor more than five thousand dollars.

SEC. 11. That the sum of one hundred thousand dollars, or so much thereof as may be necessary, be, and the same is hereby, appropriated out of any money in the State treasury not otherwise appropriated, for the purpose of carrying out the provisions of this act.

SEC. 12. That all laws and parts of laws in conflict with this act be, and the same are hereby, repealed.

APPENDIX No. 35.

LETTER ADDRESSED TO THE CHIEF OF THE BUREAU OF STATISTICS BY MR. W. H. MILLER, OF KANSAS CITY, IN REGARD TO THE TEXAS CATTLE TRAIL.

BOARD OF TRADE,
OFFICE OF SECRETARY AND TREASURER,
Kansas City, Mo., January 26, 1885.

DEAR SIR: Yours of January 23 has been received and noted. In reply to your first inquiry I would say that the sentiment of the cattle-interest north of Texas, as I understand it, is against the national trail. That was my understanding when I received your letter, and I have since conferred with several live-stock men who confirm my opinion. The reason for this is, not that the people north of Texas are hostile to Texas interests, but because they have now occupied and stocked substantially all the ranch country in the West and Northwest, and do not need the supplies of young cattle from Texas which they have heretofore received. Besides this, the Texas fever, which is almost invariably engendered among native and northern herds of cattle by simply driving the Texas cattle across their ranges, is now much more to be dreaded because of the larger interests involved. Our cattle-men do not think the national trail would be an adequate protection against it, but hold that such of the Texas cattle as may be required north should in deference to northern interests be transported in railway cars.

Heretofore Texas cattle-men have devoted themselves largely to breeding and have sold their young stock for northern ranches; these ranches being now sufficiently stocked, and largely with northern cattle, the feeling has arisen that each State and Territory should do its own breeding and mature and market its own cattle. This will require a change in Texas methods, but it is not believed that it will injure Texas, as she can mature her cattle as well as other localities, and with present and prospective rail facilities market them as well as other sections.

The difference between the Oklahoma boomers and the cattle-men is that the boomers want the unassigned lands in the Indian Territory opened to white settlement like public lands in Kansas or Nebraska, so that it may be taken up and settled in the same manner and subject to the same laws, while the cattle-men have gone into the assigned districts and leased the lands for ranches from the Indians to whom it belongs. The cattle-men have a clear legal right to do what they have done, but the boomers have not. Their movement seems to be designed to coerce the Government into opening the unassigned lands. The Kansas and Missouri men who have leased lands in the Indian Territory are not hostile to the interests of the Texas cattle-men. On the contrary, they have left openings through their fences for the northward movement of Texas cattle, and the agitation of the Texas fever comes apparently less from them than from ranch owners and farmers farther north.

Any other information I can give you, in this or any other subject, I will furnish with pleasure.

Very respectfully,

W. H. MILLER,
Secretary.

Hon. JOSEPH NIMMO, Jr.,
Chief Bureau of Statistics, Washington, D. C.

APPENDIX No. 36.

VALUE OF EXPORTS OF INDIAN CORN, WHEAT AND WHEAT FLOUR, HOGS AND PORK PRODUCTS, AND CATTLE AND BEEF AND TALLOW FROM THE UNITED STATES DURING EACH YEAR FROM 1875 TO 1884, INCLUSIVE.

Year ended June 30—	Indian-corn.	Wheat and wheat-flour.	Hogs and pork products.	Cattle and beef products.
1875	$24,456,937	$83,320,303	$57,923,845	$11,728,358
1876	33,265,280	92,816,369	68,508,005	12,029,437
1877	41,621,245	68,799,509	82,070,671	20,920,148
1878	48,030,358	121,967,737	86,955,117	23,677,910
1879	40,655,120	160,268,792	79,438,936	29,845,036
1880	53,298,247	225,879,502	85,259,331	39,233,592
1881	50,702,669	212,745,742	105,232,203	39,602,333
1882	28,845,830	149,304,773	83,362,597	26,696,070
1883	27,756,082	174,703,800	71,238,784	28,253,495
1884	27,648,044	126,166,374	70,380,973	41,080,001

APPENDIX No. 37.

EXPORTS OF CATTLE AND THEIR PRODUCTS FROM THE UNITED STATES DURING EACH YEAR FROM 1875 TO 1884, INCLUSIVE.

Year ended June 30—	Cattle.		Beef.					Tallow.		Total.
			Fresh.		Salted or cured.		Canned.*			
	Number.	Value.	Pounds.	Value.	Pounds.	Value.	Value.	Pounds.	Value.	Value.
1875	57,211	$1,103,085	(†)	(†)	48,243,251	$4,197,956	$735,112	65,461,619	$5,693,205	$11,728,358
1876	51,593	1,110,703	(†)	(†)	36,596,150	3,186,304	998,052	72,432,775	6,734,378	12,029,437
1877	50,001	1,593,089	49,210,990	$4,532,523	39,155,153	2,950,952	3,939,977	91,472,803	7,883,616	20,920,148
1878	80,040	3,896,818	54,046,77	5,009,856	38,831,379	2,973,234	5,102,625	85,505,919	6,695,377	23,677,910
1879	136,720	8,379,200	54,025,832	4,888,080	36,950,563	2,336,378	7,311,408	99,963,752	6,934,970	29,845,036
1880	182,756	13,344,195	84,717,194	7,441,918	45,237,472	2,881,047	7,877,200	110,767,627	7,689,232	39,233,592
1881	185,707	14,304,103	106,004,812	9,860,284	40,698,649	2,665,761	5,971,557	96,403,372	6,800,628	39,602,333
1882	108,110	7,800,227	69,586,466	6,768,881	45,899,737	3,902,556	4,208,608	50,474,210	4,015,798	26,696,070
1883	104,444	8,341,431	81,064,373	8,342,131	41,680,623	3,742,282	4,578,902	38,810,098	3,248,749	28,253,495
1884	190,518	17,855,495	120,784,064	1,987,331	43,021,074	3,270,033	3,173,767	63,091,103	4,793,375	41,080,001

* During the years 1875 to 1883 inclusive, classified as "meats preserved." † Included in "beef salted or cured."

APPENDIX No. 38.

VALUE OF THE EXPORTS OF CATTLE AND BEEF PRODUCTS FROM THE UNITED STATES DURING THE YEAR ENDED JUNE 30, 1884, STATED BY COUNTRIES, AND IN THE ORDER OF MAGNITUDE.

Order of magnitude.	Countries to which exported.	Cattle.	Beef products.					Total value of cattle and beef products.
			Beef, canned.	Beef, fresh.	Beef, salted or pickled.	Beef, other cured.	Tallow.	
1	Great Britain and Ireland	$17,336,606	$2,542,122	$11,516,369	$2,059,433	$60,028	$2,941,008	$36,455,566
2	British North American Possessions	96,820	250,414	455,003	261,665	485	216,368	1,280,755
3	France		25,182		21,965	303	686,551	734,001
4	Germany	30,200	158,286		183,482	851	155,075	527,894
5	Netherlands		55,907		55,538	1,739	241,468	354,652
6	Belgium		26,688		19,124	1,564	270,838	318,214
7	British West Indies	96,968	8,703	15,423	177,194	952	3,850	305,090
8	Mexico	128,630	2,546		325	140	38,006	169,647
9	Cuba	145,024	1,436	529	5,143	68	7,049	159,249
10	British Guiana	150	237		72,343	110	8,600	81,440
11	French West Indies	1,320	110		65,284	324	147	67,185
12	Denmark		7,387		32,956	160	22,726	63,229
13	Italy		883		669		61,585	63,137
14	United States of Colombia	40	3,790		35,108		22,687	61,625
15	Central American States	150	8,077		13,224	438	37,749	59,638
16	Sweden and Norway		1,980		38,440			40,420
17	Hawaiian Islands	12,785	15,921		9,120			37,826
18	San Domingo		630		711	55	31,854	33,250
19	Hayti	65			19,004	27	9,696	28,792
20	British Possessions in Africa and adjacent islands		17,409		10,674			28,083
21	Brazil	1,625	13,748		8,961	42	679	25,055
22	Dutch West Indies		306		22,364	67	1,173	23,910
23	Dutch Guiana	75	767		21,882		100	22,824
24	Hong-Kong		11,497		8,494			19,991
25	Venezuela		1,771		3,286	90	9,807	14,954
26	Portugal						12,734	12,734
27	Peru		1,208		4,728		4,945	10,881
28	Chili	72	1,287		8,755	60	427	10,601
29	British Honduras	1,400	699		5,677		21	7,797
30	French Possessions, all other	1,080	3,467		2,194			6,691
31	Danish West Indies		161	7	5,948	226	211	6,553
32	Japan	375	3,230		2,608			6,213
33	Russia on the Baltic and White Seas						5,337	5,337
34	Azore, Madeira, and Cape Verde Islands		118		3,334		1,559	5,011
35	French Guiana		696		4,057			4,753
36	Porto Rico		141		3,252	29	944	4,366
37	Russia, Asiatic		150		3,984			4,134
38	Liberia				3,701			3,701
39	China		2,496		395			2,891
	All other countries	160	4,317		7,253		181	11,911
	Total	17,855,495	3,173,767	11,987,331	3,202,275	67,758	4,793,375	41,080,001

APPENDIX No. 39.

LETTER FROM MR. T. C. EASTMAN, IN REGARD TO THE EARLY HISTORY OF THE SHIPMENT OF FRESH BEEF AND OF CATTLE FROM THE UNITED STATES TO EUROPE.

NEW YORK, *April* 13, 1885.

DEAR SIR: In answer to your inquiry as to the shipments of dressed beef and live cattle to Europe: I commenced the shipments of beef in quantity the 1st of October, 1875. There were a few experimental shipments made of a few carcasses of beef in small refrigerators, on the deck of a vessel, which were failures, and were discontinued.

Nelson Morris, of Chicago, told me a year or two after I commenced shipping that he shipped a few carcasses of beef on the open deck of a vessel, which arrived in England in bad condition. This was previous to my shipments in refrigerators. The steamship companies running passenger boats carried all kinds of meats in their refrigerators for ship's use. The first meat shipped to Europe in quantity as a commercial article was shipped by myself, as before stated. The first live cattle shipped to England for beef for the English markets were shipped by Mr. Henry Bell, of the firm of John Bell & Sons, Glasgow, Scotland. They made several shipments by the Anchor Steamship Company in 1873 or 1874, but they discontinued in consequence of heavy losses on the voyages.

But in 1876, after I had got the beef shipments fairly opened, live cattle shipments commenced again from New York. I cannot now say who made the first shipment that year, but I am under the impression that Samuels Brothers, of New York, were the parties. I started in about the same time with live shipments, and have been shipping ever since.

Yours, respectfully,

T. C. EASTMAN.

JOSEPH NIMMO,
Chief of Bureau.

APPENDIX No. 40.

LETTER FROM MR. T. C. EASTMAN, IN REGARD TO THE STATES FROM WHICH EXPORT CATTLE CHIEFLY COME, AND THE AVERAGE WEIGHT OF THE DRESSED BEEF OF SUCH CATTLE.

NEW YORK, *April* 18, 1885.

DEAR SIR: In answer to your inquiry about beef cattle and dressed beef exporting to Europe from this country, would say that most of it comes from the corn-producing States, Illinois, Missouri, Kansas, Nebraska, and Iowa, and they are generally purchased in the market at Chicago and Saint Louis. I should say that as much as nineteen-twentieths of all the export cattle come from those States. They are not all raised in those States, but they are finished up on corn for the markets, mostly in those five States. The grade of beef exported in quarters will average from 700 pounds to 750 pounds per steer. Those shipped alive will average from 800 pounds to 850 pounds per steer in the beef. The most desirable cattle for export are about the weights before named and of fine quality; the commoner grades being used at home, with a good share of the very best cattle, which are wanted in our eastern cities. There are a few cattle in the spring of the year exported from the State of Pennsylvania, where they are collected in the fall and stall-fed through the winter and sold in the spring. Kentucky also furnishes some cattle for export from the middle of June to the first of November. West Virginia, Ohio, Michigan, and the State of New York furnish considerable cattle from the first of August to the first of December. Very few of them are for export. About two-thirds of the export beef for the last two years has been slaughtered in New York, the other third in Chicago. All the cattle shipped from the west to eastern markets are slaughtered in the eastern markets, except those that are exported alive. The New England States are supplied mostly with beef slaughtered in Chicago. New York, Philadelphia, and Baltimore are also partly supplied with dressed beef from Chicago. I think about one-half of the consumption of beef in the Eastern States comes from Chicago in refrigerator cars.

Yours, respectfully,

T. C. EASTMAN.

CHIEF OF BUREAU OF STATISTICS.

APPENDIX No. 41.

STATEMENT IN REGARD TO CHICAGO BEEF PACKING AND THE CHICAGO BEEF TRADE—1884-'85.

(By Messrs. Howard, White & Co., publishers of the Daily Commercial Bulletin, Chicago, Ill.)

BEEF PACKING.

No distinction as to seasons is made in cattle-slaughtering operations, and a year's business under this head is based, by the trade, upon the calendar year, the same as in handling live cattle. Of the amount of beef packed last year other than that put into tin cans, there can be no reliable figures given. Indeed, the packing of beef in barrels is a comparatively insignificant branch of the business, and is carried on mainly by a few small firms who handle a few hundred head of cattle yearly, and ship their product abroad on special orders. The great bulk of the cattle-slaughtering business in Chicago is carried on by five firms, viz: Swift Bros. & Co., Armour & Co., Hammond & Co., Fairbank Canning Co., and Libby, McNeil & Libby. The latter do an exclusive but large canning business, while Swift Bros. & Co. and Hammond & Co. ship all of their cattle in the carcass. Armour & Co. do an immense business both in dressed and canned beef.

It is in the dressed-beef trade that the largest increase is shown during the year just closed. Early in 1884 butchers and other interested parties in the East made a great fight against western dressed beef, and an effort was even made to induce the New York legislature to enact a law hostile to it. Despite opposition, the business has flourished and grown beyond all expectations, and as a matter of fact is about the only local industry that can demonstrate by actual figures a marked increase over the previous year. Our operators now have cold storage rooms in all of the principal cities and towns of the Eastern and New England States, and as it has been demonstrated over and over again that meat can be kept in perfect condition for two months if need be, consumers have generally come to consider beef handled in this way with high favor.

The beef-canning business was rather on the drag during almost the entire season of 1884, by reason of a considerable accumulation of this product in the European markets, for it is there that a very large percentage of these goods finds an outlet. During November and December, however, the British Government purchased quite heavily for the Nile expedition, which relieved the markets of accumulations, and quite recently a heavy order was placed by them with a prominent firm here for canned beef to supply the troops in the Soudan country.

Following were the monthly and total receipts and shipments of live cattle at this point during 1884, with comparisons:

Months.	Received.	Shipped.
January	165,124	80,087
February	135,417	64,968
March	122,633	59,243
April	139,082	68,947
May	124,150	53,202
June	127,187	54,915
July	161,008	62,373
August	143,015	57,186
September	167,801	65,358
October	198,717	86,503
November	175,143	68,779
December	158,420	70,323
Total for year	1,817,697	791,884
Total for 1883	1,878,944	966,758

The receipts of cattle for the twelve months ending February 28, 1885, foot up 1,814,923 head, and shipments for the same time were 782,612, which is practically the same as for the calendar year. According to these figures there were left over for the use of dressed and canned beef buyers, and for local consumption, 1,025,813 head of cattle in the calendar year of 1884. For the past twelve months ending February 28, 1885, the number left over was 1,032,311 head. The January and February receipts of cattle this year amounted to 297,767, against 300,511 in 1884, and the shipments to 135,783, against 145,055 a year ago. While there was a falling off in the receipts in 1884, as compared with 1883, of 61,247 cattle, the number shipped out alive was 174,874 less, or a difference of 113,657 head, and this fairly represents the increase in the dressed and canned beef business of 1884, estimating the total local consumption of beef for the two years at the same number. Upon this latter point estimates made by those best posted in the matter differ very widely, but 6,000 cattle a week, or, in round numbers, 300,000 a year, is probably not far wide of the mark.

As nearly as can be ascertained, the number of cattle slaughtered here for shipment in the carcass, for canning, and for the city trade during the past year, were as follows:

	Head.
Swift Bros. & Co	401,617
Armour & Co	306,374
Fairbank Canning Company	163,423
Hammond & Co*	153,000
Libby, McNeil & Libby	112,215
Lees, Hendricks & Co	43,862
Schoeneman & Co	30,800
J. S. Smith & Co	18,995
Hess Bros	10,000
Total number	1,240,286
Total number 1883–'84	1,080,020

[Chicago beef trade—1884–'85.—Number of cattle slaughtered during the past twelve months 1,250,301, of which about 70 per cent. were required for the dressed-beef trade.]

While the hog-slaughtering interest of Chicago attracted considerable attention during the year ending March 1, the cattle-slaughtering interest was not neglected, and the returns show a further material enlargement of the business. Merchants engaged in this branch of trade have further increased their facilities for handling the product, and are now enabled, through branch agencies, to supply all the leading markets of the country with "Chicago dressed beef." Refrigerator cars are now forwarded direct over the various railroad lines diverging from the city, loaded with miscellaneous supplies of all kinds of fresh meats in the carcass—beef, mutton, and pork. The large territory west of our market is now largely devoted to raising live stock. More particularly has attention been given to this raising catttle in large numbers, and this has stimulated the dressed-beef trade to a great extent. The receipts of Indian Territory and Texan cattle during the year were about 360,000 head, and the arrivals of far western cattle were about 232,000 head, an increase in the aggregate of about 155,000 head over the returns of the previous year. These cattle were of better quality than usual, as the owners of the ranches are improving their stock, and endeavoring to place their cattle on sale in good condition, that they may compete with the native grades in the leading markets. The greater proportion of the cattle raised on the ranches fall into the hands of slaughterers and are devoted to the packing, canning, and local trade—the better qualities being accepted for the dressed-beef interest. The latter, however, absorbs the greater proportion of the good native cattle received, as the product comes in competition in the Eastern markets with home-raised cattle, and the meat must necessarily be of good quality. The receipts of cattle during the past twelve months ending March 1, 1885, were 1,824,923 head, and the shipments during the same period 782,612 head, including those forwarded to Hammond, Ind., leaving for the use of city slaughterers 1,042,311 head. Prices ruled somewhat irregular, depending greatly on the quality. Fair to extra native steers ranged at $4.10 to $8—the outside figures for extra droves during the holiday season. Far West and Texan cattle sold rather freely at $2.90 to $6, according to quality and condition—the inside figures for rough and mixed lots—though Texans were purchased freely within the range of $2.65 to $6.25, the bulk of the trading during the late summer

* The slaughtering establishment of Hammond & Co. is located at State Line. This house, however, is really a Chicago institution, and its slaughtering should be credited to this city. As the cattle handled by it—153,000 head—were all bought in the Chicago market and included in the shipments returned, they should, to make the numbers slaughtered approximate the *net* supply, be deducted from the shipments and added to the *net* supply. This would make the *net* supply left over for packers for the past twelve months 1,185,311 head.

and fall months, when the receipts were liberal, at $2.80 to $5.50. More cattle were packed during the year 1884–'85 for the domestic trade, and increased quantities of beef hams and all descriptions of barreled beef were produced. More attention was given to the canning trade, and it is understood that some large contracts have been made within the past two or three weeks with merchants in foreign markets.

CATTLE KILLED.

The following table exhibits the number of cattle slaughtered and disposed of by parties engaged in the different branches of the beef trade during the twelve months ending March 1, 1885, as compared with the corresponding time in 1883–'84:

Firms.	1884–'85.	1883–'84.
Armour & Co	306,374	287,221
Eastland & Duddleston	17,000	15,400
Fairbank Canning Company	163,423	131,611
Hammond, Geo. H., & Co*	145,010	130,968
Lees, Hendricks & Co	43,862	28,786
Libby, McNeil & Libby	112,215	116,247
Shoeneman & Co	30,800	25,500
Swift Bros. & Co	401,617	342,890
Other houses	30,000	86,000
Total	1,250,301	1,164,623

*Slaughtered at Hammond, Ind., a short distance from Chicago, and reported in the shipments of live.

DRESSED-MEAT TRADE.

There is a very important branch of the dressed-meat trade which has been inaugurated within the past twelve months, and which is rapidly growing. It is the consignment of mixed car loads of beef, pork, and mutton, which are forwarded to the smaller distributing points all over the country, to supply the local trade. Merchants in the leading manufacturing districts of the Eastern and Middle States, and also in the lumbering districts of the Northwest, forward their orders to our markets for small quantities of fresh meats for immediate use, which are forwarded in refrigerator cars. Not only are the leading slaughterers engaged in this business, but smaller houses have commenced operations. It is estimated that outside of the number of hogs slaughtered for packing and city consumption during the winter, at least 50,000 were slaughtered for the dressed-meat trade, of the consignment of which there has been no special record kept. The number of sheep slaughtered for the dressed-meat trade is quite large—possibly one-third of the receipts—but no definite figures can be given.

MOVEMENT OF DRESSED BEEF.

In order to exhibit the enlargement of the trade in dressed beef, the following table is presented, showing the receipts and shipments during the past two years:

Years.	Received.	Shipped.
	Pounds.	*Pounds.*
1884	4,407,330	377,955,997
1883	1,334,769	314,600,149
Increase	3,073,061	63,355,848

The increase in the receipts is about 230 per cent., and the shipments were enlarged about 20 per cent.

CONCLUSION.

We extend our thanks to the manufacturers of hog products for their kindness in furnishing us with the complete details of their business. To the members of the provision trade, who have extended us many courtesies and favors during the past year, we also express our gratitude. Therefore, to all interested in the provision trade, we respectfully present our sixteenth annual report of the packing of this city.

HOWARD, WHITE & CO.,
Publishers of the Daily Commercial Bulletin.

APPENDIX No. 42.

STATEMENT OF THE NUMBER AND AREA OF ORIGINAL AND FINAL HOMESTEAD ENTRIES MADE FROM THE DATE OF THE PASSAGE OF THE ACT MAY 20, 1862, TO JUNE 30, 1884, INCLUSIVE.

States and Territories.	Original homesteads.		Final homesteads.	
	Number of entries.	Acres.	Number of entries.	Acres.
Arizona	534	74, 638. 07	158	22, 555. 69
California	29, 729	3, 946, 306. 91	12, 343	1, 565, 336. 39
Colorado	11, 154	1, 566, 184. 97	4, 406	618, 470. 68
Dakota	88, 880	13, 741, 654. 39	12, 100	1, 804, 924. 17
Idaho	4, 296	642, 542. 43	1, 113	158, 697. 28
Kansas	94, 032	12, 770, 450. 95	42, 358	5, 865, 088. 28
Montana	3, 592	533, 721. 21	970	139, 258. 56
Nebraska	77, 943	10, 211, 772. 38	33, 503	4, 183, 117. 94
Nevada	877	123, 314. 00	270	36, 009. 25
New Mexico	2, 939	459, 737. 22	1, 408	210, 553. 58
Oregon	14, 847	2, 014, 037. 02	5, 176	714, 129. 01
Utah	6, 536	869, 583. 11	2, 890	390, 203. 46
Washington	18, 018	2, 470, 263. 88	4, 740	630, 224. 28
Wyoming	927	131, 706. 32	197	24, 026. 93
Total	354, 304	50, 255, 912. 86	121, 632	16, 862, 595. 50

APPENDIX No. 43.

STATEMENT OF THE NUMBER AND AREA OF ORIGINAL AND FINAL DESERT-LAND ENTRIES MADE UNDER THE ACT OF MARCH 3, 1877, *FROM JULY* 1, 1877, *TO JUNE* 30, 1884.

States and Territories.	Original desert entries.		Final desert entries.	
	Number of entries.	Acres.	Number of entries.	Acres.
Arizona	347	154,431.26	45	17,284.39
California	1,126	383,548.55	119	32,547.57
Dakota	22	18,101.00	1	300.00
Idaho	563	169,915.79	65	17,339.97
Montana	1,294	482,281.07	262	72,598.31
Nevada	563	160,412.37	102	25,941.29
New Mexico	429	121,367.60	16	5,247.03
Oregon	214	67,292.80	24	9,749.14
Utah	943	188,894.17	228	31,955.39
Washington	117	106,069.64	18	2,079.10
Wyoming	1,904	774,096.69	138	41,030.47
Total	7,522	2,626,410.94	1,018	256,092.39

APPENDIX No. 44.

STATEMENT SHOWING THE NUMBER OF TIMBER-CULTURE ENTRIES AND THE TOTAL ACREAGE THEREOF IN THE FOLLOWING STATES AND TERRITORIES UNDER THE TIMBER-CULTURE ACTS OF MARCH 3, 1873, *AND JUNE* 14, 1878, *TO JUNE* 30, 1884, *INCLUSIVE.*

States and Territories.	Number of entries.	Acres.
Arizona	145	26, 376. 85
California	2, 046	276, 216. 42
Colorado	2, 414	347, 719. 74
Dakota	42, 667	8, 246, 304. 66
Idaho	1, 804	238, 001. 13
Kansas	24, 666	3, 938, 040. 45
Montana	1, 371	180, 509. 21
Nebraska	25, 031	3, 553, 479. 64
Nevada	33	4, 559. 79
New Mexico	377	51, 856. 78
Oregon	3, 315	497, 645. 16
Utah	285	34, 846. 67
Washington	5, 434	789, 720. 84
Wyoming	448	63, 830. 98
Total	110, 036	18, 249, 108. 32

APPENDIX No. 45.

ACRES CERTIFIED OR PATENTED FOR RAILROADS UP TO JUNE 30, 1884.

Territories.	Acres.	States and Territories.	Acres.
.....	2, 595, 053. 00	Nebraska	4, 977, 585. 62
.....	935, 158. 70	California	3, 453, 789. 12
.....	2, 884, 074. 03	Colorado	211, 279. 87
.....	1, 760, 834. 98	Nevada	361, 981. 23
.....	404, 664. 71	Oregon	322, 082. 40
.....	2, 534, 606. 57	Utah	46, 198. 49
.....	2, 313, 996. 77	Wyoming	79, 942. 68
.....	4, 710, 961. 50	Washington	2, 896. 76
.....	3, 229, 010. 84	New Mexico	23, 667. 36
.....	2, 874, 088. 79		
.....	8, 544, 842. 59	Total	47, 629, 046. 19
.....	5, 360, 881. 32		

APPENDIX No. 46.

STATEMENT SHOWING THE NUMBER OF ACRES OF LAND SURVEYED AND UNSURVEYED IN THE FOLLOWING STATES AND TERRITORIES TO JUNE 30, 1884.

States and Territories.	Area surveyed.	Area unsurveyed.	Total area.
	Acres.	*Acres.*	*Acres.*
Oregon	36,778,775	24,196,585	60,975,360
Nevada	31,767,405	39,970,195	71,737,600
Colorado	54,088,821	12,791,179	66,880,000
Nebraska	46,988,259	1,648,541	48,636,800
Kansas	51,770,240		51,770,240
Dakota	41,299,300	55,297,180	96,596,480
Montana	16,225,021	75,791,619	92,016,640
Idaho	8,887,362	46,340,798	55,228,160
Washington	19,950,395	24,845,765	44,796,160
Utah	12,269,828	41,794,812	54,064,640
Wyoming	43,054,987	19,590,33	62,645,120
Arizona	11,795,441	61,110,799	72,906,240
New Mexico	43,673,551	33,895,089	77,568,640
Total	418,549,385	437,272,695	855,822,080

APPENDIX No. 47.

STATEMENT BY MAJOR A. W. EDWARDS, OF THE DAILY ARGUS, FARGO, DAK., IN REGARD TO THE RANGE AND RANCH CATTLE BUSINESS OF DAKOTA.

Question. I suppose most of the old ranges in Dakota were originally stocked with Texas stock?

Answer. Yes, originally. The range-cattle business in Dakota is quite young. The Marquis de Mores was the first party to introduce stock there. He has a large number of cattle and sheep. Theodore Roosevelt, of New York, is just establishing a range there. I think that the Marquis de Mores has 27,000 head of cattle and 10,000 sheep. Theodore Roosevelt has about 11,000 head of cattle. The Marquis de Mores has sublet some of his herd to other herdsmen, upon the basis of a share of the profits, to some extent. The Marquis de Mores has established a large packing and slaughtering house at Medora, a point where the Northern Pacific crosses the Little Missouri. He has established cooling houses along the line of the Northern Pacific Railroad between Medora and Saint Paul—the principal one at Fargo—and supplies the large local trade both north and south of the Northern Pacific Railroad. He has at least three-quarters of a million dollars invested in the enterprise. Ranges are also being established at the south side of the Black Hills, in Custer County, and also on the Belle Fourche, on the north side of the Black Hills, in Lawrence County. These Lawrence County ranges are on the main roads entering Deadwood. The Marquis de Mores has constructed a wagon road from Medora to the Black Hills. About 240,000 young cattle were sent west last year over the Northern Pacific Railroad into Western Dakota and Eastern Montana.

There have been as many young cattle shipped west as there has been shipped east during the last two years. The Northern Pacific has stock-yards at Miles City, Glendive, Bismarck, Fargo, and Saint Paul.

There is a very active movement going on in Dakota toward improving the breed of cattle both for dairy purposes and for beef. President James J. Hill, of the Saint Paul, Minneapolis and Manitoba Railway, last year purchased some 200 fine bred young bulls, which he distributes over the lines of his road to responsible farmers free of charge, for the purpose of improving the breed. James B. Power, land and emigration commissioner of the Saint Paul, Minneapolis and Manitoba Railway, opened a stock farm in 1878 35 miles south of Fargo, where he has been breeding Durhams and Herefords. He is also breeding some fine trotting stock.

In Western Dakota the cattle are all on the range.

APPENDIX No. 48.

INTERVIEW WITH HON. JOHN HAILEY, DELEGATE IN CONGRESS FROM THE TERRITORY OF IDAHO, AND HON. JOSEPH K. TOOLE, DELEGATE IN CONGRESS FROM THE TERRITORY OF MONTANA, APRIL 2, 1885.

MEMORANDA, APRIL 2, 1885.

Hon. John Hailey, Delegate in Congress from Idaho, states that if they had artesian wells in that Territory a great number of cattle could be raised there. The sinking of artesian wells has not been experimented upon in Idaho.

Hon. Joseph K. Toole, Delegate in Congress from Montana, states that there are two artesian wells at Miles City, and the result has been reasonably satisfactory.

Mr. Hailey says that Texas cattle can do better at the north, for the reason that the air is more stimulating, and the grasses are more nutritious. There are at least 350,000 or 400,000 cattle in Idaho. The bulk of our stock comes from Oregon. We bring most of our stock for breeding purposes from the Eastern States. I do not think there are a hundred head of cattle in the Territory that have got any Texas blood in them.

Mr. Toole says that the range-cattle business commenced in Montana in 1868 or 1869 to a considerable extent. Some cattle were brought there as early as 1861.

In reply to the question as to what is the sentiment in Montana in regard to the Texas cattle trail, Mr. Toole replies that the sentiment is unanimously opposed to it, for the reason that it monopolizes the ranges of that country in the interest of people who are not actual residents of that country, and because it takes up the ranges by large companies foreign to Montana to the detriment of actual residents, and it tends also to deteriorate the breed of cattle.

Mr. Toole says that in Montana these large corporations from the South, which during the last five or six years have been driving up immense herds of cattle from Texas, have done so without pretending to acquire any water rights. Only to a very small extent have the great range owners of Montana acquired the ownership of land along the water. The same is true in regard to Idaho. Of the total number of cattle in Montana only a small proportion is owned by foreign individual proprietors. The sentiment of the people of Montana is opposed to allowing people to come in there with their large herds and eat out the ranges right up to the doors of the actual settlers. It is the general opinion that that would follow the establishment of the cattle range. The Texas cattle destroy more grass by running over it and tearing the grass out of the roots than they do by grazing upon it.

Question. Is it not true that the Texas cattle are much better rustlers, and therefore better able to endure the rigors of the climate during the winter time, than the native cattle?

Mr. Hailey's reply is that as a general thing they do not stand it so well. In the first place, when they come from Texas, by they time they get to the northern ranges they are thin in flesh and are not prepared to go into the winter. Again, we find that cattle brought from the east during the first winter west will not take care of themselves and endure the northern climate as well as the Texas cattle. The pure blooded Texas cattle do not take on as much flesh as the native cattle, and, consequently, are not prepared to stand the northern climate as well as the cattle of the northern ranges.

Mr. Hailey says that the great cattle owners of Montana and Idaho who are regarded as citizens, including the foreigners, do not depend for the privileges of water upon the actual ownership of lands along the water.

Messrs. Hailey and Toole denounced the proposition to lease the public domain as an outrage upon the settlers.

APPENDIX No. 49.

INFORMATION FURNISHED BY HON. MORTON E. POST, LATE DELEGATE IN CONGRESS FROM THE TERRITORY OF WYOMING, IN REGARD TO THE CATTLE BUSINESS OF THAT TERRITORY.

THE IMPROVEMENT OF THE BREED OF RANGE AND RANCH CATTLE.

The most important points bearing upon this subject relate, first, to the class of bulls used; second, to the female stock; and, third, to the character of the increase. The Herefords and the Durhams, or Short-horns, are the favorite breeds. Our stockmen during the last few years have been doing their very best to get the best breeds, the highest class of bulls which they can procure. The cattle breeders of Wyoming have imported bulls quite largely from Europe. The very best specimens of the fine breeds have been procured. The importations from England have been principally Herefords. Durham bulls have been imported mostly from the States of Kentucky, Illinois, and other States of this country. The number of cows and heifers brought into Wyoming has been much less than that of bulls. The range-cattle business of Wyoming began along from 1868 to 1870. From that time to about 1876 or 1878 the great bulk of the cattle *were* brought from Texas. About three-fourths of the entire stock were steers, and the rest cows and heifers. After that the rangemen imported largely from Nevada and Oregon and the Territories of Montana, Idaho, and Utah, and also some from Colorado—mixed herds of cattle. The cattle imported from Utah, Nevada, Oregon, Idaho, and Montana were a good class of cattle, being composed mainly of improved natives, and largely also of improved Texas stock. The cattlemen of Wyoming realized at an early day the importance of improving the breed of their animals, and accordingly began as early as 1874 or 1875 to import graded and thoroughbred bulls. The result is that the general average of the range cattle of Wyoming to-day is improved stock, having large frames and small bones. They are well-developed animals, furnishing a superior quality of beef. We have done more in Wyoming toward improving the breed of cattle than has been done in any other section of the range-cattle area. Our cattle to-day are of a very high standard, and we have increased the value of our herds materially by systematic breeding. The success already attained in stimulating the cattlemen of Wyoming to still further efforts in the direction of improving the breed of their stock. The example of Wyoming is being followed very extensively throughout the range cattle area. The general quality of the cattle of Montana is about equal to that of Wyoming, but with that exception Wyoming is much ahead of all the rest.

THE WYOMING STOCK ASSOCIATION.

The Wyoming Stock Association is one of the best organized and most effective in its workings of any stock association in the United States.

It is controlled by stockmen for their mutual benefit. They have detectives and inspectors stationed at such points as may be necessary to look after stray cattle, and cattle being shipped or driven out of the country with brands belonging to any member of the association. They arrange for the spring "round ups," so as to work in harmony and have each man's interest looked after, and to see that each owner furnishes his proportion both of cowboys and supplies. These "round ups" are under the control of captains or officers appointed under the association, and have entire charge. In case of a dispute as to the different brands, instead of having recourse to law, such matters are referred to a disinterested party as arbitrator, and his decision is usually accepted as final.

In regard to the inspection system, it has proven very beneficial, as cattle sometimes stray some distance from the ranges. The inspectors are stationed at Omaha, Kansas City, and other points where cattle are shipped through by rail. When a train of cattle arrives at any one of these points the inspector looks through the cattle, and if he finds cattle whose brand indicates that they belong to a member of the Wyoming Stock Association, other than the shipper, such cattle are consigned to some commis-

sion merchant in Chicago for sale and the proceeds are remitted to the association, and by it handed over to the proper owners.

The stock growers' association of the State of Colorado and of Nebraska and Dakota work in harmony with the Wyoming association. The detectives of the associations look after cattle thieves and men guilty of altering brands, &c.

The cattle business up to the present time has been the great business of Wyoming. The laws of the Territory have been framed specially with the view of protecting this interest.

THE SOIL OF WYOMING.

The cultivation of the land of Wyoming is simply a question of water. The soil throughout the Territory produces the natural grasses in abundance, but there is not a sufficient rainfall for farming. Irrigation is necessary to produce crops successfully. All the agriculture carried on in Wyoming is by means of artificial irrigation. It is estimated that we have 10,000 square miles in the Territory which can thus be watered successfully. This constitutes about 10 per cent. of the 98,000 square miles in the Territory.

INCREASED RAINFALL.

The climatic changes in Wyoming have been very perceptible during the last two years. The increased precipitation of moisture has been very great; perhaps not so great as in the western part of Kansas and Nebraska. But if the increase continues for a term of years we shall undoubtedly be able to raise crops in almost any part of the Territory without irrigation. The season of 1884 was very favorable, and large quantities of hay were cut on the high lands.

THE NATURAL GRASSES OF WYOMING.

Of natural nutritious grass we have some 56 different varieties. The prevailing varieties are principally gramma or gamma, the bunch grass, wild oats, buffalo grass, and a peculiar kind of blue grass. This is different from the blue grass of Kentucky. I have had no personal experience in the cultivation of lucern, but know in a general way of the experience of others. Where it has been tried it has proved very successful. Usually three crops are grown during each year. Until it is well rooted it requires to be irrigated, but as the roots go down very deep it finally becomes self-sustaining. It is found to be a very nutritious and sustaining article of food for cattle, horses, hogs, and sheep. It is largely cut and used as hay, three crops a year being the average.

IMPROVING THE BREED OF RANGE CATTLE.

Doubts have been expressed as to the practicability of maintaining the high grade of cattle if unprotected the year round on the range. It may be true to some extent as to thoroughbred cattle, but we find by experience that our native-born stock maintain their finer characteristics—even those which are obliged to shift for themselves throughout their life-time. We find that their instinct leads even our higher bred animals to "rustle" and seek food for themselves without deteriorating. Our experience is that there is no class of cattle so well qualified to resist the rigors of our winters as cattle raised on the ranges, without regard to the standard of their breeding. We find that the Texas steers driven up into our country show a larger proportion of loss, especially during their first winter north, than among our own native-born cattle.

The losses of calves have been greatly reduced by taking the bulls away in the fall and holding them in a pasture until the proper breeding season.

THE BREEDING OF CATTLE ON THE NORTHERN RANGES.

Considering the inferior quality of stock and the prices which we have had to pay for young cattle from Texas, it is much more desirable to raise our stock in Wyoming than to import from Texas.

During the last eight or ten years our people have, to a considerable extent, bought Texas cattle, but it has been for the reason that we were not able to breed cattle fast enough to supply the demands of new capital seeking investment. I think we will have to be satisfied with what we produce, from the fact that it is impracticable under the present condition of affairs to import successfully, on account of the opposition to Texas cattle being driven across the States and Territories which they have to pass through in order to reach our Territory.

The increased price of young Texas stock within the last four or five years has been due to the increased demand for the purpose of stocking the northern ranges and to

the high prices which have ruled for beef, and the depreciation in number of the stock cattle in the Western States, especially in Illinois, Iowa, Missouri, and Wisconsin. The tendency now is for the beef-cattle business to leave the old States and move out on the Territories. The farmers of those States are devoting their attention more and more to the dairy business.

Question. To what extent can the capacity of Wyoming for cattle raising be increased?

Answer. That depends entirely upon the increase of the water supply.

Question. How far can cattle range from water at the present time?

Answer. Five or six miles is as long a distance as cattle will successfully graze from water.

Question. So that the range lands now between the belts of lands following the streams are to-day practically unavailable for grazing purposes?

Answer. Yes; practically so.

Question. Has the experiment of artesian wells been tried to any extent in the high lands of Wyoming?

Answer. No; not at all.

Question. And for the reason, I suppose, that you still have an abundance of land within reach of a natural water supply?

Answer. Yes; that is so.

Question. What is the character of the soil of Wyoming as compared with that of the adjacent States and Territories?

Answer. In the greater portion of the Territory of Wyoming the soil is of a gravelly loam, carrying quite a sod, and for that reason it holds more moisture than the soil of the adjacent Territories and the State of Colorado. We are less liable to drought and we find that with an increasing water supply we have an increased crop of grass. The grass of Wyoming does not "kill out" as the result of long drought and overstocking of the ranges, for the reason that the soil is firm, and the roots of the grass well set, and the surface well covered, whereas in a large portion of the Southern country, also in Nevada, Utah, and Idaho, the soil is loose and sandy, so that when the seasons are dry and the wind blows the soil away from the roots it is apt to parch out except in the mountainous country, where the soil is very firm. The soil of Montana and Dakota is quite similar to that of Wyoming.

Question. What is the percentage of loss on account of the severity of the winter?

Answer. The percentage of loss from all causes would be a general average of from 3 to 5 per cent. This loss occurs mainly from young heifers dropping calves too early in the season. Wyoming is not so much exposed to the cold, damp "blizzards" as Texas and the South generally, nor to the extreme cold of the North as is Dakota and Montana, therefore we are most favorably situated. This, in connection with our abundant supply of grass, enables our cattle to approach the winter in better condition, and to withstand the severe storms with less loss. The snowfall is about the same in Wyoming as in Montana, but the range of the thermometer is not so great in Wyoming. Our principal rainfall is during spring and summer months, and before the frosts occur, so that the grass cures in its natural condition, and retains its full nutritious qualities during winter.

Question. What per cent. of your cows drop calves each year?

Answer. I suppose about 50 to 60 per cent. The increase from two-year-old heifers is about 40 per cent.

Question. How does the increase in Wyoming compare with the increase in Texas and the South?

Answer. I should say that the increase was much greater in that country than in Wyoming; but every two animals raised in Wyoming are worth three raised in the Southern country.

Question. About what relation does the amount of capital invested in horses and in sheep in Wyoming bear to the amount of capital invested in cattle; also, how does the amount of capital in horses and in sheep compare with that in cattle in the adjoining States and Territories, in so far as you can judge?

Answer. The breeding of horses in Wyoming is, practically, a new industry. The immense cattle business has excluded almost every other branch of the stock business, but within the last four or five years some of our people have been turning their attention to horses to some extent, and there are now quite a large number of horse ranches or breeding establishments in the Territory, and the owners are showing the same foresight as our cattlemen have shown in the improvement of cattle. The business promises to grow and be profitable. It is impossible to state the relative magnitude of the two industries. The horse business, at the present time, is insignificant as compared with the cattle business. It is estimated that there is now invested in Wyoming over $100,000,000 actual valuation, including the cattle business alone, and not including lands, and probably not over $5,000,000 altogether invested in horses. Last year we shipped out of Wyoming somewhat over 160,000 head of cattle, and the previous year over 200,000 head. In 1884 the prices had fallen, and therefore

stock was held back. Estimated at $50 a head, the shipments of last year of 160,000 head would be somewhat about $8,000,000, but that does not represent the increased value of the herds on the range, for the reason that at least five-sixths of the shipments consisted of steers, leaving the heifers and young cows on the range. Regarding the sheep business: We have, perhaps, altogether in the Territory in the neighborhood of half a million head of sheep, that would be worth from $1,500,000 to $2,000,000.

Question. Is the climate, soil, and natural food supply of Wyoming favorable to the raising of sheep?

Answer. Yes; the business has been reasonably successful.

Question. Do you brand your young horses?

Answer. Yes; by using a small brand, which does not disfigure the animal, or injure his market value.

Question. Do you allow your horses to mingle with those of other owners of horses, as the cattle of different proprietors intermingle on the ranges?

Answer. Horses that run on the public domain mix with other horses, but horses do not stray as badly as cattle, and become more attached to a range than cattle, and for that reason do not mix up so much as cattle. The horses are not "rounded up" by the association. In some instances horses are kept entirely within inclosures.

Question. Of late years have owners of herds of cattle who own no water rights, i. e., no land along the streams, come into Wyoming and allowed their cattle to intermingle with those of the ranchmen who own lands on the streams, and what position does the Wyoming Stockgrowers' Association take in regard to such cattle-owners without water rights?

Answer. The association has taken no action one way or the other as an association. But very few instances have occurred where cattlemen have turned their cattle loose on ranges already occupied. It would be unadvisable for any new-comer to undertake to graze a large herd upon ranges already sufficiently stocked. There is a common law or understanding among ranchmen, generally, with regard to the range which is supposed to be tributary to their watering privileges, and they would naturally feel aggrieved, and be likely to resent any attempt on the part of a new-comer to place cattle upon the ranges, and in case he had secured no water rights of his own, he would be regarded as an intruder. The intruder would, to some extent, jeopardize the interest of the occupants of the ranges, as well as his own, by turning loose more cattle than the range would support.

Question. Has there ever been any rule proposed, or even tacitly adopted, among ranchmen of any particular section as to proportioning the number of cattle which they shall keep according to the extent of the water privileges which they have?

Answer. None that I have ever heard of.

Question. The increase in the number of cattle on the different ranges will, of course, differ very much. Would it not be true in time, if it is not true to-day, that there will be a very great disproportion existing between the amount of water privileges which the different ranchmen will own and the number of cattle which they should own?

Answer. There is no present indication of any trouble of that sort. We have practically exhausted the supply of Nevada, Oregon, and Washington Territory, and the supply from Texas being shut off by the closing up of the trail will compel the cattle-owners of Wyoming to rely upon their own increase.

Question. What do you think of the proposition to slaughter beef in Wyoming and ship the carcasses east instead of the living animals.

Answer. I think it would be a desirable improvement and a great advantage to the stock interest, besides furnishing to consumers a clean and wholesome class of beef, free from the bruises and feverishness incident to shipping cattle alive, especially our range animals, which are highly nervous and excitable.

Question. Do you think it would be a paying investment to establish slaughtering places in Wyoming?

Answer. I am not posted as to the business of slaughtering, but it occurs to me that if it is a good business to be carried on in Chicago, it would certainly be more profitable to slaughter the cattle near the ranges.

Question. In view of the fact that the carcasses weigh only about 57 per cent. of the weight of the live animals, would not this difficulty arise—that the remaining 43 per cent., representing the hides, hoofs, horns, and other parts, including offal, which is now utilized in the varied industries of the city of Chicago, could not be so profitably disposed of in Wyoming?

Answer. In my opinion, it would cost less to ship the hides, blood, hoofs, horns, &c., of the animal, after being slaughtered, than to ship it in the shape of live animals. The railroad companies would lose very little in the matter of total weight haul, from the fact that the hides, hoofs, horns, and blood would also be shipped, but in more compact forms, making more desirable freights for the railroads. It seems that the railroad companies have lost sight of this. They think they would lose all

but the carcasses. Besides, if we count the ice which is used in cooling t would probably, in the long run, haul more tons weight of dressed animals would of animals shipped alive.

Question. Has any attempt been made in Wyoming to slaughter cattle ship carcasses east?

Answer. There has been no effort of any magnitude with the proper facil

Question. What is the average length of time in transporting cattle from to Chicago?

Answer. About eight days.

Question. How many rests do the cattle take?

Answer. They are usually unloaded about three times, for periods of tw hours each time.

Question. What is the average shrinkage of stock in being transported fr enne to Chicago?

Answer. I think about 100 pounds to each 1,200 pound animal. Cheyen great center for the cattle trade of the northern ranges.

Question. What is the cost per head of transporting cattle from Wyomin cago, including all incidental expenses?

Answer. The average cost of marketing cattle, including transportation fr in Wyoming, and feed, handling, and commissions in Chicago, is, say, $8 Cattle weigh on the average 1,200 pounds apiece at Chicago, and lose pounds in shrinkage. This applies to Wyoming-bred cattle. I desire to ad point that in speaking about Wyoming cattle, and particularly the shi them, I have had reference entirely to our native Wyoming cattle, and not wintered cattle.

APPENDIX No. 50.

STATEMENT BY MR. W. H. MILLER, SECRETARY OF THE KANSAS CITY BOARD OF TRADE, IN REGARD TO CATTLE MOVEMENTS AT THAT CITY, AND NORTH BY TRAIL.

BOARD OF TRADE, OFFICE OF SECRETARY AND TREASURER,
Kansas City, Mo., April 17, 1885.

DEAR SIR: Your favors of April 4 and 8 came to my office during my absence at New Orleans, hence the delay in answering.

In reply to your inquiries concerning the Texas cattle drive, I would say that the statement published in my annual report includes all cattle driven northward from Texas. In the earlier years covered by this statement the cattle driven north consisted largely of beef cattle, and were shipped eastward from stations on the Atchison, Topeka and Santa Fé Railroad, the Kansas Pacific and Union Pacific Railroads, and from the southern terminus of the Kansas City, Lawrence and Southern Kansas Railroad, which was at that time Coffeyville, Kansas. Many of those cattle were marketed in Kansas City, and subsequently shipped eastward into the feeding districts of the Western and Northwestern States. Many, also, were slaughtered here. During the past six or seven years nearly all of the drive has been made up of stock cattle for ranges north of Texas. A greater or less number have been intended for the Indian trade, but most have been stock cattle. The Texas beef cattle during this time have been shipped out of the State by rail, and have been mainly carried by the Iron Mountain, the Southern, and the Missouri Pacific Railroads.

My information is that the drive of 1880 included but 300,000 head of cattle, 150,000 less than the statement made to you by Mr. Loving, of Fort Worth, Tex. I include, however, only cattle that crossed the State lines into Kansas, Colorado, and New Mexico, while his, most likely, includes all that passed Fort Worth, many of which stopped in the pan handle of Texas and in the Indian Territory. This probably accounts for the difference in his estimate and mine, and, if I am correct in this surmise, about that difference ought to exist.

No record is kept here, either by merchants or the stock yards, which distinguishes as to whether receipts are of native, range, or Texas origin. Hence it is impossible for me to make that distinction for you. I have applied to several of our merchants who handle range cattle largely for an approximate, but they say that they cannot make one. I can say, however, that no cattle now come to this market direct from Texas. Our receipts are all of native and range cattle; but the range cattle are mostly all of Texas origin, having been driven from that State in previous years as stock cattle. A few extra fine native cattle are shipped eastward from this city without entering the Saint Louis or Chicago markets, but the general fact is that cattle marketed here are afterwards marketed in one or other of these cities.

In reply to yours of the 8th, I would say first that no data has ever been preserved here which would enable me to give you the average weight of cattle shipped from here. The number shipped eastward during 1884 was 411,706. The total number shipped was 463,001, besides which there were 90,991 driven out of the yard for local consumption and packing purposes.

As before remarked, substantially all of those shipped went either to Saint Louis or Chicago on their way east.

My records show a shipment of 12,746,870 pounds of fresh beef from this point, of which 7,934,770 pounds went by eastward lines. Some of this beef has been shipped to the Atlantic seaboard cities, but how much I have no means of telling.

I regret that I have not been able to give you more information concerning the cattle product of Texas, and the ranges north of that State, but I know of no means of obtaining it.

Any further information I can furnish you at any time will be furnished with great pleasure.

Very respectfully,

W. H. MILLER,
Secretary.

HON. JOSEPH NIMMO, Jr.,
Chief Bureau of Statistics, Washington, D. C.

APPENDIX No. 51.

Value of the exports of cattle and products of cattle from the United States, by countries, for the year ending June 30, 1884.

Order.	Countries.	Value.	Order.	Countries.	Value.
1	Great Britain and Ireland	$36,455,566	22	Brazil	$25,055
2	Dominion of Canada	1,210,035	23	Dutch West Indies	23,910
3	France	734,001	24	Dutch Guiana	22,824
4	Germany	527,894	25	Hong-Kong	19,921
5	Netherlands	354,652	26	Venezuela	14,954
6	Belgium	318,214	27	Portugal	12,784
7	British West Indies	305,090	28	Peru	10,881
8	Mexico	169,647	29	Chili	10,601
9	Cuba	159,249	30	British Honduras	7,797
10	British Guiana	81,440	31	French Possessions, all other	6,691
11	New Foundland and Labrador	70,720	32	Danish West Indies	6,553
12	French West Indies	67,185	33	Japan	6,213
13	Denmark	63,229	34	Russia on the Baltic and White Seas	5,237
14	Italy	63,137			
15	United States of Colombia	61,625	35	Azore, Madeira, and Cape Verde Islands	5,011
16	Central American States	59,638			
17	Sweden and Norway	40,420	36	French Guiana	4,753
18	Hawaiian Islands	37,826	37	Porto Rico	4,364
19	San Domingo	33,250	38	Russia, Asiatic	4,134
20	Hayti	28,792	39	All other countries	18,543
21	British Possessions in Africa and adjacent islands	28,083		Total	41,060,001

Per cent. for Great Britain 88.7.

APPENDIX No. 52.

Value of the imports of cattle and beef products into Great Britain and Ireland for the year 1883.

Order.	Countries.	Values.	Order.	Countries.	Values.
1	United States of America	$33,504,401	15	Belgium	$230,911
2	Denmark	10,941,843	16	British East Indies	75,990
3	British North America	6,288,565	17	Falkland Islands	62,379
4	Australasia	4,361,898	18	Peru	8,760
5	Germany	3,247,398	19	British Africa	7,436
6	Sweden and Norway	2,399,242	20	Gibraltar	4,662
7	Portugal	2,278,914	21	Chili	3,407
8	Spain	2,132,004	22	Bermudas	2,759
9	Netherlands	1,399,328	23	Italy	973
10	France	801,391	24	British West Indies	584
11	Argentine Republic	779,443	25	Victoria	97
12	Uruguay	538,026		All other countries	8,146
13	Russia	338,703			
14	Channel Islands	311,198		Total	69,728,458

APPENDIX No. 53.

Statement showing the exports from the United States of cattle and cattle products, including dairy products, during the fiscal years 1790–1884, *inclusive.*

Year ended—	Cattle and cattle products, including dairy products.														
	Cattle and cattle products.									Dairy products.					
	Live cattle.		Beef.		Tallow.		Hides.		Total values.	Butter.		Cheese.		Total values.	Total values.
	No.	Values.	Pounds.a	Values.	Pounds.	Values.	No.	Values.		Pounds.	Values.	Pounds.	Values.		
Sept. 30—															
1790	5,406	$99,960	8,932,400	$279,551	200,020	$20,722	230	$485	$400,718	469,224	$48,587	144,734	$8,830	$57,417	$458,135
1791	4,627	84,413	12,566,469	377,917	317,195	28,548	704	1,408	492,316	933,520	91,685	120,901	8,463	100,148	592,464
1792	4,551	.....	14,942,692	.....	152,622	.....	1,602	.....	*b*	658,616	.....	125,925	.....	*b*	.....
1793	3,728	.....	15,021,200	.....	309,366	.....	9,278	.....	*b*	514,640	.....	146,269	.....	*b*	.....
1794	3,495	.....	20,173,200	.....	187,212	.....	35,531	.....	*b*	2,171,232	.....	601,954	.....	*b*	.....
1795	2,510	.....	19,229,800	.....	49,515	.....	27,865	.....	*b*	1,589,784	.....	2,343,093	.....	*b*	.....
1796	4,625	.....	18,504,200	.....	187,403	.....	40,363	.....	*b*	2,554,885	.....	1,794,536	.....	*b*	.....
1797	3,827	.....	10,362,400	.....	26,012	.....	108,862	.....	*b*	1,255,435	.....	1,256,109	.....	*b*	.....
1798	4,283	.....	17,884,200	.....	16,610	.....	11,838	.....	*b*	1,313,563	.....	1,183,284	.....	*b*	.....
1799	5,304	.....	18,264,200	.....	19,926	.....	72,650	.....	*b*	1,314,502	.....	1,164,590	.....	*b*	.....
1800	9,824	.....	15,009,000	.....	15,079	.....	33,003	.....	*b*	1,822,341	.....	913,843	.....	*b*	.....
1801	8,486	.....	15,066,200	.....	37,142	.....	3,691	.....	*b*	2,830,016	.....	1,674,834	.....	*b*	.....
1802	9,039	.....	12,304,000	.....	32,863	.....	953	.....	*b*	2,361,576	.....	1,332,224	.....	*b*	.....
1803	7,563	*c*	15,586,800	*c*	59,217	*c*	4,814	*c*	1,145,000	2,489,954	*c*	1,196,867	*c*	585,000	1,730,000
1804	6,290	*c*	26,979,200	*c*	35,440	*c*	4,635	*c*	1,520,000	2,476,550	*c*	1,299,872	*c*	490,000	2,010,000
1805	5,822	*c*	23,106,400	*c*	13,681	*c*	5,692	*c*	1,545,000	1,656,724	*c*	843,005	*c*	415,000	1,960,000
1806	7,107	*c*	23,483,800	*c*	53,757	*c*	1,819	*c*	1,360,000	1,898,690	*c*	683,163	*c*	481,000	1,841,000
1807	8,148	*c*	16,841,800	*c*	53,115	*c*	4,801	*c*	1,108,000	1,963,480	*c*	879,697	*c*	490,000	1,598,000
1808	2,050	*c*	4,020,200	*c*	4,985	*c*	.....	*c*	265,000	894,152	*c*	316,876	*c*	196,000	461,000
1809	3,981	*c*	5,711,000	*c*	4,562	*c*	.....	*c*	425,000	1,366,374	*c*	588,907	*c*	204,000	689,000
1810	5,212	*c*	9,539,800	*c*	11,205	*c*	2,500	*c*	747,000	1,620,538	*c*	741,878	*c*	318,000	1,065,000
1811	8,522	*c*	15,348,600	*c*	44,775	*c*	800	*c*	1,195,000	1,878,789	*c*	944,116	*c*	395,000	1,560,000
1812	4,713	*c*	8,551,400	*c*	16,140	*c*	.....	*c*	524,000	[illegible]	*c*	[illegible]	*c*	329,000	853,000
1813	469	*c*	8,748,200	*c*	300	*c*	277	*c*	[illegible]	[illegible]	*c*	976,593	*c*	[illegible]	[illegible]

1814	227	c	4,050,400	c	2,360	c	68	c	241,000	185,100	c	184,827	c	50,000	300,000	
1815	4,604	c	2,626,000	c	37,541	c	51	c	407,000	844,020	c	468,609	c	242,000	640,000	
1816	8,958	c	6,647,800	c	21,847	c	9,072	c	738,000	676,195	c	678,064	c	223,000	961,000	
1817	7,975	378,813	7,577,800	454,668	17,641	2,117	6,396	9,594	845,192	670,387	154,189	394,003	59,235	213,424	1,058,616	
1818	4,715	160,310	7,375,000	479,375	15,080	1,810	3,397	6,794	648,289	655,547	131,109	536,097	64,332	195,441	843,730	
1819	3,471	135,360	6,993,200	454,558	35,897	4,308	1,942	3,884	598,119	911,621	182,324	1,148,380	114,838	297,162	895,281	
1820	4,116	205,800	10,638,200	638,292	85,741	11,146	1,593	2,393	857,631	1,463,275	219,491	828,434	82,843	302,334	1,159,965	
1821	5,018	c	13,377,400	c	81,691	c	13,558	c	698,323	1,069,024	c	706,431	c	190,287	888,610	
1822	3,557	c	19,522,000	c	63,856	c	15,079	c	844,534	1,149,783	c	722,548	c	221,041	1,065,575	
1823	2,865	c	12,283,600	c	735,333	c	42,499	c	739,46	1,171,701	c	591,689	c	192,778	932,239	
1824	2,759	c	13,214,800	c	96,261	c	46,166	c	707,299	1,386,232	c	933,158	c	204,20b	911,504	
1825	3,095	c	17,605,000	c	533,451	c	56,043	c	930,465	1,442,197	c	1,230,101	c	247,787	1,178,252	
1826	3,427	c	14,577,200	c	423,610	c	29,841	c	733,430	176,579	c	735,390	c	207,765	941,195	
1827	3,768	c	18,137,000	c	301,983	c	22,883	c	772,636	148,480	c	641,385	c	184,049	956,685	
1828	1,193	c	13,328,000	c	422,130	c	39,642	c	719,961	1,184,329	c	688,548	c	176,354	896,315	
1829	2,044	c	10,220,000	c	491,106	c	44,282	c	674,955	969,137	c	916,695	c	176,205	851,160	
1830	4,125	c	9,368,400	c	533,436	c	50,146	c	717,683	899,396	c	688,241	c	142,370	860,053	
1831	5,881	c	12,154,000	c	679,623	c	299,473	c	829,982	1,728,212	c	1,131,817	c	264,796	1,094,778	
1832	8,123	c	11,101,400	c	622,522	c	52,110	c	774,087	1,509,686	c	1,391,853	c	290,820	1,064,907	
1833	6,837	c	12,864,400	c	676,841	c	58,179	c	958,076	1,346,364	c	1,213,092	c	258,452	1,216,528	
1834	6,441	c	9,236,200	c	771,239	c	60,015	c	755,219	1,084,960	c	819,567	c	190,099	945,318	
1835	7,348	c	7,605,600	c	491,412	c	41,495	c	638,761	684,624	c	887,000	c	164,809	803,570	
1836	4,683	c	10,045,200	c	443,765	c	39,379	c	699,116	361,395	c	486,234	c	114,033	813,149	
1837	3,237	c	5,615,200	c	168,795	c	112,096	c	585,146	281,939	c	411,338	c	96,176	681,322	
1838	2,820	c	4,698,200	c	363,036	c	56,762	c	528,231	495,108	c	604,660	c	148, 91	676,422	
1839	1,775	c	3,237,800	c	118,037	c	33,852	c	371,646	424,609	c	519,017	c	127,550	499,196	
1840	4,259	c	3,936,200	c	273,946	c	112,500	c	623,373	1,177,639	c	723,217	c	210,749	834,122	
1841	7,861	c	11,307,400	c	980,027	c	45,898	c	904,918	3,785,993	c	1,748,471	c	504,815	1,409,733	
1842	9,887	c	9,716,200	c	7,038,092	c	58,187	c	1,212,638	2,055,133	c	2,456,607	c	388,185	1,600,823	
June 30—																
1843d	5,181	c	., 562,400	c	7,489,582	c	50,340	c	1,092,949	3,408,247	c	3,440,144	c	508,968	1,601,917	
1844	10,822	c	21,204,800	c	9,915,366	c	62,558	c	1,810,551	3,251,952	c	7,343,145	c	758,820	2,569,380	
1845	5,252	c	20,307,600	c	10,022,504	c	111,636	c	1,926,809	3,587,489	c	7,941,187	c	878,865	2,805,674	
1846	3,101	c	29,844,600	c	10,435,696	c	143,323	c	2,474,208	3,436,660	c	8,675,390	c	1,063,087	3,537,295	
1847	3,383	c	22,395,800	c	11,172,975	c	181,394	c	2,434,003	4,214,433	c	15,637,600	c	1,741,770	4,175,773	
1848	1,919	c	20,743,800	c	8,004,235	c	36,145	c	2,905,341	2,751,086	c	12,913,305	c	1,361,668	3,267,009	
1849	2,607	c	20,657,200	c	9,334,138	c	23,390	c	2,058,958	3,406,242	c	17,433,682	c	1,654,157	3,713,115	
1850	1,848	c	19,061,400	c	5,858,450	c	71,940	c	1,605,608	3,876,175	c	13,020,817	c	1,215,463	2,821,071	
1851	1,350	c	18,129,600	c	8,198,278	c	86,624	c	1,689,958	3,994,542	c	10,361,189	c	1,124,652	2,814,610	
1852	1,078	c	24,451,800	c	4,767,020	c	55,421	c	1,500,429	2,222,264	c	6,650,420	c	779,391	2,279,820	
1853	1,076	c	25,208,200	c	3,926,598	c	25,955	c	2,214,554	2,658,911	c	3,763,932	c	862,343	3,076,897	
1854	1,022	c	25,244,000	c	9,325,471	c	23,622	c	2,757,022	3,774,634	c	7,003,974	c	1,258,393	4,015,425	
1855	1,501	84,680	29,808,795	2,600,547	11,866,902	1,352,406	114,787	361,982	4,390, 15	2,315,249	418,723	4,846,568	514,034	932,757	5,332,372	
1856	2,478	133,743	25,671,675	1,983,151	7,458,47	829,086	40,184	101,174	3,047,154	2,930,491	580,286	8,737,029	887,705	1,467,991	4,515,145	
1857	4,325	144,840	15,747,650	1,218,348	5,698,315	632,286	153,726	624,867	2,620,341	3,141,592	503,084	6,453,072	647,423	1,240,507	3,860,848	
1858	28,247	1,238,769	24,149,900	2,081,856	8,283,812	824,970	b	875,753	5,021,348	3,082,117	541,863	8,098,527	731,910	1,273,773	6,295,121	
1859	32,513	1,345,058	31,059,290	2,188,056	7,103,045	712,551	b	520,539	4,766,204	4,572,065	750,911	7,103,323	649,302	1,400,213	6,166,417	
1860	27,501	1,052,426	39,251,070	2,674,324	15,269,535	1,598,176	b	1,036,260	6,361,186	7,640,914	1,144,321	15,515,790	1,565,630	2,709,951	9,071,137	
1861	8,885	223,246	25,849,310	1,675,773	29,718,364	2,942,370	b	673,818	5,515,207	15,531,381	2,355,985	32,361,428	3,321,631	5,677,616	11,192,823	
1862	3,634	197,019	27,490,570	2,017,077	46,773,768	4,026,113	b	518,687	6,758,896	26,691,247	4,164,344	34,052,678	2,715,892	6,880,236	13,639,132	
1863	5,509	236,547	29,541,565	2,185,921	63,792,754	6,738,486	b	355,855	9,516,809	35,172,415	6,733,743	42,045,054	4,216,804	10,950,547	20,467,356	
1864	6,191	117,573	35,666,400	3,023,018	55,197,914	6,215,260	56,071	305,	9,660,962	20,895,435	6,140,031	47,751,329	5,638,007	11,778,038	21,439,000	

Statement showing the exports from the United States of cattle and cattle products, &c., during the fiscal years 1790–1884, *inclusive*—Continued.

Year ended—	Cattle and cattle products, including dairy products.														
	Cattle and cattle products.									Dairy products.					
	Live cattle.		Beef.		Tallow.		Hides.		Total values.	Butter.		Cheese.		Total values.	Total values.
	No.	Values.	Pounds.	Values.	Pounds.	Values.	No.	Values.		Pounds.	Values.	Pounds.	Values.		
June 30—															
1865	$9,588	$159,179	$27,333,960	$3,304,771	$30,622,865	$4,979,135	$205,950	$1,023,596	$9,466,681	$21,559,892	$7,292,715	$53,154,318	$11,697,746	$18,990,461	$28,457,142
1866	7,730	323,637	19,053,800	2,766,451	19,364,686	2,488,587	*b*	317,741	5,896,416	3,806,835	1,267,851	36,411,985	6,036,828	7,304,679	13,201,095
1867	10,221	268,236	14,182,562	1,727,350	23,296,93	2,747,618	*b*	286,381	5,029,585	4,912,355	1,184,367	52,382,127	7,893,535	9,077,902	14,107,487
1868	16,120	330,183	22,683,531	2,696,01	22,682,412	2,540,227	*b*	538,106	6,104,527	2,071,873	582,745	51,097,203	7,010,424	7,593,169	13,697,696
1869	*c*	*c*	27,299,197	2,430,357	20,534,628	2,362,630	*b*	292,491	5,085,478	1,324,332	484,094	39,960,387	6,437,866	6,921,960	12,007,438
1870	27,530	439,987	26,727,773	1,939,778	37,513,056	3,814,861	*b*	365,212	6,559,838	2,019,288	592,229	57,296,327	8,881,934	9,474,163	16,034,001
1871	20,530	403,491	43,880,217	3,825,666	33,859,31	3,025,035	*b*	700,604	7,954,796	3,965,043	853,096	63,698,867	8,752,990	9,606,086	17,560,882
1872	28,033	565,719	26,652,094	1,870,826	76,151,218	6,973,189	*b*	1,445,178	10,854,912	7,746,261	1,498,812	66,204,025	7,752,918	9,251,730	20,106,642
1873	35,455	695,957	31,605,196	2,447,48	79,170,558	7,068,471	*b*	3,605,023	13,816,932	4,518,844	952,019	80,366,540	10,498,010	11,450,929	25,267,861
1874	56,067	1,150,857	36,036,537	2,956,676	101,755,631	8,135,320	*b*	2,560,382	14,803,235	4,367,963	1,092,381	90,611,077	11,898,995	12,991,376	27,794,611
1875	57,211	1,103,085	48,243,251	4,197,956	65,461,619	5,692,205	*b*	4,729,725	15,722,971	6,360,827	1,506,996	101,010,853	13,659,603	15,166,599	30,889,570
1876	51,593	1,110,703	36,596,150	3,186,304	72,432,775	6,734,378	*b*	2,905,921	13,937,306	4,644,894	1,109,496	97,676,264	12,270,083	13,579,579	27,316,885
1877	50,001	1,593,080	88,366,143	7,503,475	91,472,803	7,883,616	*b*	2,480,427	19,460,598	21,527,242	4,424,616	107,364,666	12,700,627	17,125,243	36,585,841
1878	80,040	3,896,818	99,878,150	7,983,090	85,505,919	6,605,377	*b*	1,286,840	19,862,125	21,837,117	3,931,822	123,783,736	14,103,529	18,035,351	37,897,476
1879	136,720	8,379,200	90,976,395	7,219,458	99,963,752	6,934,970	*b*	1,171,523	23,705,151	38,248,016	5,421,205	141,654,474	12,579,968	18,001,173	41,706,324
1880	182,756	13,344,195	129,954,666	10,322,965	110,767,627	7,689,232	*b*	649,074	32,005,466	39,236,658	6,690,687	127,553,907	12,171,720	18,862,407	50,867,873
1881	185,707	14,304,103	146,703,461	12,526,045	96,403,372	6,800,628	*b*	903,464	34,534,240	31,360,500	6,256,024	147,995,614	16,380,248	22,636,272	57,170,512
1882	108,110	7,800,227	115,486,203	10,671,437	50,471,210	4,015,798	*b*	1,449,737	23,937,199	14,794,305	2,864,570	127,989,782	14,058,975	16,923,545	40,860,744
1883	104,444	8,341,431	122,744,906	12,084,413	38,810,098	3,248,749	*b*	1,220,158	24,894,751	12,348,641	2,290,665	99,220,467	11,134,526	13,425,191	38,319,942
1884	190,518	17,855,495	163,805,138	15,257,364*e*	63,091,103	4,793,375	*b*	1,304,329	39,210,563	20,627,374	3,750,771	112,869,575	11,663,713		54,625,047
														15,414,484	

a The official returns from 1790 to 1865 state the quantity of beef exported in barrels and tierces, which have been reduced to pounds at the rate of 200 pounds and 305 pounds, respectively.

b Not stated. *c* Not specified. *d* Nine months ended June 30, 1843. *e* Not including beef canned, $3,178,767.

APPENDIX No. 54.

WESTWARD SHIPMENTS OF CATTLE INTO NORTHERN RANGES BY RAIL

[Northern Pacific Railroad Company, General Freight Agent's Office; operating Northern Pacific Railroad, Saint Paul and Northern Pacific Railroad, Little Falls and Dakota Railroad, Northern Pacific, Fergus and Black Hills Railroad, Fargo and Southwestern Railroad, Sanborn, Cooperstown and Turtle Mountain Railroad, Jamestown and Northern Railroad, Rocky Mountain Railroad of Montana, Helena and Jefferson County Railroad. J. M. Hannaford, general freight agent; S. L. Moore, assistant general freight agent.]

SAINT PAUL, MINN., *April* 10, 1885.

DEAR SIR: Your telegram of the 9th instant, asking for the total number of cattle shipped west to the ranges over the line of our road during the year 1884 and the approximate average value is received. In round figures, we shipped west during the time mentioned 98,000 head of young cattle, averaging half yearlings and half two-year-olds. These cattle were worth about $23 per head at the point of delivery, or $2,254,000. I think there should be $225,000 added to these figures for the excess valuation of bulls, blooded stock, &c., which were mixed in with these shipments, and which we took under a release from the owner at the same rate and valuation, and cannot therefore tell how many there were.

Very truly, yours,

J. M. HANNAFORD,
General Freight Agent.

Mr. JOSEPH NIMMO, Jr.,
Chief of Bureau of Statistics, Washington, D. C.

[Union Pacific Railway Company. General Traffic Manager's Office.]

OMAHA, *May* 4, 1885.

DEAR SIR: In reply to your telegram of the 9th ult., we shipped over our line in Nebraska 1,025 car-loads of cattle in 1884 to the western ranges, and 284 car-loads over our Kansas lines. We average about 20 head per car-load, making 1,309 cars; 20 per car = 26,180 head of cattle; average, $30 per head.

Yours, truly,

THOS. L. KIMBALL,
General Traffic Manager.

Hon. JOSEPH NIMMO, Jr.,
Chief of Bureau of Statistics, Washington, D. C.

[Telegram.]

TOPEKA, KANS., *April* 17, 1885.

To JOSEPH NIMMO, Jr., *Washington, D. C.:*

Cattle shipped west to ranges during 1884 numbered 31,250; horses, about 7,000. Refer to C. J. Morse, Kansas City, as to valuation.

J. J. GODDARD.

APPENDIX No. 55.

STATEMENT BY MR. LEVI C. WADE, PRESIDENT OF THE MEXICAN CENTRAL RAILWAY COMPANY, IN REGARD TO THE RANGE AND RANCH CATTLE BUSINESS OF MEXICO.

[Mexican Central Railway Co., Limited; Mason Building, No. 70 Kilby street. P. O. Box 2813. Levi C. Wade, president. S. W. Reynolds, treasurer.]

BOSTON, *April* 25, 1885.

DEAR SIR: I have your letter of the 23d instant, inquiring in regard to range and ranch cattle in Mexico.

Since the opening of our line, the number of cattle in sight has evidently increased. Between Paso del Norte and the city of Chihuahua there is a large extent of grazing country, not excelled by any in the United States, with rich abundant grasses and a plentiful supply of water. It contains many fine lakes and ponds, and on it are pastured vast herds of neat-cattle and horses.

In spite of the duties upon cattle, there is some trade between Mexico and the United States, as you will see by our annual report for the year ending December 31, 1884 (a copy of which I send you), page 31, we carried 2,219 horses and 2,855 head of neat-cattle. Nearly the whole of those were transported from different points in Mexico to the United States.

Our stock business is growing, and the establishment of a stock yard at El Paso would very materially increase the traffic. At present, the buying of Mexican cattle is done wholly by individuals who go to Mexico for the purpose of obtaining cattle and horses for their ranches in the United States.

Yours, truly,

LEVI C. WADE,
President.

JOSEPH NIMMO, Jr., Esq.,
Chief of Bureau of Statistics, Washington, D. C.

APPENDIX No. 56.

STATEMENT IN REGARD TO THE EARLY SHIPMENTS OF CATTLE AND DRESSED BEEF TO EUROPE, BY MR. WILLIAM COLWELL, OF BOSTON, MASS.

BRIGHTON, MASS., *April* 13, 1885.

DEAR SIR: In reply to yours of the 11th instant, the first cargo of beef cattle that I shipped to Europe was in October, 1876. I believe those were the first shipped from any port in the United States, with the single exception of one small lot in the spring of same year. I have been across twenty-six times since, myself, with cattle. I am not certain as to the exact time when dressed beef was sent, but, as near as I can recollect, I think it was in the fall of 1874 or spring of 1875, from New York.

Respectfully, &c.,

WILLIAM COLWELL.

JOSEPH NIMMO, Esq.

APPENDIX No. 57.

STATEMENT IN REGARD TO THE EARLY SHIPMENTS OF CATTLE AND DRESSED BEEF TO EUROPE, BY MR. NELSON MORRIS, OF CHICAGO, ILL.

UNION STOCK YARDS, EXCHANGE BUILDING,
Chicago, April 20, 1885.

DEAR SIR: In reply to yours of 11th inst., I beg to say that I was the first exporter of live cattle from the United States to Europe. I exported a few cattle to London and Glasgow in 1868. I also exported some dressed beef prior to 1870.

The difficulties attending the exportation of live cattle when this trade was in its infancy were many, but experience has removed most of them, and the mortality, under ordinary circumstances, has been greatly reduced, and now averages less than 1 per cent. The most serious drawback now attending the exportation of live cattle from the United States to English ports, is the law requiring all United States cattle to be killed at port of entry within five days after landing, and debarring them from being taken into the interior. No such restrictions apply to Canadian cattle. Many of the difficulties first encountered in exporting dressed beef have also been overcome.

Respectfully, yours,

NELSON MORRIS.

JOSEPH NIMMO, Jr.,
Chief of Bureau of Statistics, Washington.

APPENDIX No. 58.

STATEMENT BY MR. SILAS BENT, OF SAINT LOUIS, MO., IN REGARD TO THE METEOROLOGY AND CLIMATOLOGY OF NORTH AMERICA, WITH SPECIAL REFERENCE TO THE RANGE AND RANCH CATTLE AREA.

SAINT LOUIS, MO., *May* 4, 1885.

DEAR SIR: Thanks for your meteorological statement, which I herewith return with some verbal corrections and criticisms of one or two paragraphs of your quotations from Professor Elias Loomis, of Yale College, and Capt. Samuel H. Mills, Acting Chief Signal Officer, U. S. Army, and which I shall here repeat with additional comments, as you desired. Professor Loomis says that "near the Atlantic coast the amount of rainfall is evidently increased by vapor which comes from the Atlantic ocean. For the remaining portion of the United States east of the Rocky Mountains the vapor which furnishes the rainfall may come to some extent from these two sources (Gulf of Mexico and Atlantic Ocean), but it is chiefly derived from the chain of the great lakes, from the rivers, small lakes, and collections of water from the moist earth." The only criticism that I shall offer to this assumption is to ask the professor whence came the vapor which gave rise to this "chain of great lakes, rivers, small lakes, and collections of water from the moist earth" and whence comes the vapor that now keeps them in such unvarying supply of water from year to year if not from the prevailing west winds which come to this region from the Pacific Ocean? Captain Mills says, "It seems probable that evaporation from the Kuro-Siwo is no more important than that from the remainder of the Pacific Ocean.

The southwest wind that [prevails (?)] north of California passes over the Rocky Mountains and deposits rain on our Pacific coast undoubtedly draws most of its moisture from the Pacific Ocean." To this I reply that the only "remainder of the Pacific Ocean" not covered by the tepid waters of the Kuro-Siwo is a narrow strip of water lying directly along the eastern coast of Asia and to the west of a line drawn from the northeastern part of Japan to Behring Straits, and which, being of the same general temperature as the west winds that come from Siberia and Central Asia, it can, of course, impart but little or no moisture to those winds, and it is not until those winds reach the tepid waters of the Kuro-Siwo, which cover the whole Pacific Ocean from Japan northeastwardly and eastwardly to the shores of our continent and extending from Behring Straits to the Tropic of Cancer, that they begin to laden themselves with moisture by evaporation from the Pacific Ocean; for the power of the atmosphere to produce such evaporation is in exact proportion to the dryness and low temperature of the wind as compared with that of the water at the time and place of its contact with these tepid waters from the equator.

The climatic power in temperature alone of these tepid waters is forcibly shown by such distinguished writers as Mr. James Croll, of England, and Commander M. F. Maury. In his work entitled "Climate and Time," Mr. Croll says, "The quantity of heat conveyed by the Gulf Stream" (from the Gulf of Mexico through the Straits of Florida into the North Atlantic) "is equal to all the heat which falls upon the globe within thirty-two miles on each side of the equator;" that "the stoppage of the Gulf Stream would deprive the Atlantic of 77,479,650,000,000,000,000 foot-pounds of energy in the form of heat per day;" or, as the same fact is more popularly stated by Commander Maury in his "Physical Geography of the Sea," when speaking of the effect on the climate of Central America and Mexico arising from the excess of heat carried off from them by the Gulf Stream, says, "A simple calculation will show that the quantity of heat daily carried off by the Gulf Stream from those regions and discharged over the Atlantic Ocean is sufficient to raise mountains of iron from zero to the melting point, and to keep in flow from them a molten stream of metal greater in volume than the waters daily discharged from the Mississippi River." Mr. Croll further says that "were all ocean and ærial currents stopped, so that there could be no transference of heat from one point of the earth's surface to another, the difference between the temperature of the equator and the poles would amount to 218 degrees," and that "without ocean currents the globe would not be habitable." Now, *the sea, the atmosphere, and the sun are to the earth what the blood, the lungs, and the heart are to the animal economy*, and it is not only the transference and equalization of temperature over the face of the earth that is accomplished by the circulation of the currents of the ocean and of the atmosphere, but also, in the Divine economy, the parallel beneficence of such a distribution of moisture as is necessary for the sustenance of animal and vegetable life.

throughout the world, and it is in this aspect of the question that it may be safely averred that were the Kuro Siwo shut out from the North Pacific, so that none of its moisture could be distributed over our continent, the whole of that part of North America lying north of the thirty-fifth parallel of latitude and west of the Alleghany Mountains would be an uninhabitable desert, and that if the ocean currents alone were stopped, so as to cut off the supply of moisture now obtained from them by the winds, and distributed over the continents and islands of the world, such stoppage would be death to the world as effectually and completely as the stoppage of the circulation of the venous system is death to the life of man. Any attempt, therefore, to solve the great and apparently intricate problems of meteorology, climatology, or even forestry, without starting the investigations from the ocean currents (which comprise a grand system of circulation, embracing all the oceans of the world, and which is as sublime in its simplicity as it is beneficent in its life-giving influences upon whom the animal and vegetable kingdom of the earth), will and must ever prove unreliable and unconvincing, because these currents—next to the sun—are the bases of meteorology and climatology, by reason of the heat and moisture which they throw off to the atmosphere for distribution in all parts of the world. For as Commander Maury says, "An examination into the economy of the universe will be sufficient to satisfy the well-balanced minds of observant men that the laws which govern the atmosphere and the laws which govern the ocean are laws which were put in force by the Creator when the foundations of the earth were laid, and that therefore they are laws of order. Else why should the Gulf Stream, for instance, be always where it is, and running *from* the Gulf of Mexico and not somewhere else, and sometimes running *into* it? Why should there be a perpetual drought in one part of the world and continual showers in another; or why should the winds and waves of the sea ever "clap their hands with joy, or obey the voice of rebuke?"

With apologies for my delay in answering your letter, which was occasioned by unavoidable engagements, and regrets that I am compelled to touch so briefly upon the abundance of evidence that I find on every hand to sustain the hypothesis advanced in my address to the Cattle-Growers' Convention upon the Mountains and Plains of North America, I beg you will accept my grateful acknowledgment for your earnest interest in this matter.

Believe me, very respectfully and truly, yours,

SILAS BENT.

Hon. JOSEPH NIMMO,
Chief of Bureau of Statistics, Treasury Department,
Washington, D. C.

APPENDIX No. 59.

REPORT BY MR. WM. BURCHARD, CHIEF OF COMPILATION DIVISION OF THE BUREAU OF STATISTICS, IN REGARD TO THE CANADIAN NORTHWESTERN PROVINCES, AND THE CONDITIONS GOVERNING THE TRADE BETWEEN THESE PROVINCES AND THE UNITED STATES.

TREASURY DEPARTMENT,
BUREAU OF STATISTICS,
September 24, 1884.

SIR: In conformity with your special instructions, dated July 18, 1884, in regard to that part of my duty which related to the commerce between the United States and the Canadian provinces of the Northwest, I have the honor to report that about twenty days of the time allotted to me were spent in Saint Paul, Minneapolis, Winnipeg, and the British Northwest Territory.

Your letters of introduction procured me great facilities for gathering information, but the immense material relating to this important question makes it difficult to condense it into a comprehensible report. My only hope is that the material annexed will give you the key to the treatment of this question in full.

I have the honor to be, sir, respectfully, your obedient servant,

W. BURCHARD.

Hon. JOSEPH NIMMO, Jr.,
Chief of Bureau of Statistics.

RELATIONS OF COMMERCE BETWEEN THE UNITED STATES AND THE CANADIAN NORTHWEST.

The relations of commerce between the United States and the British Provinces of Manitoba, Assiniboia, and Saskatchewan could not be fully explained without a dissertation upon the wealth and resources of the Canadian Northwest, compared with the resources and the development of that part of the United States bordering upon those provinces. The State of Minnesota had not until quite recently a direct railway communication with the Canadian Northwest, and a statement in regard to the progress of this State will be fully sufficient to show that any progress of the Canadian Northwest for the next ten or twenty years must be comparatively small and of little influence in regard to such commercial relations.

The Dominion of Canada is putting forth great efforts to keep the Northwest Provinces in close commercial connections with the Eastern Provinces, but the tariff laws alone are such that a commercial exchange becomes nearly an impossibility. In addition to this the Canadian Northwest offers so little of interest to the large manufacturing establishments of the Northwestern States of the United States, that full attention has not been given to the possible development of that section. Saint Paul had only 40,000 inhabitants in the year 1880, but at the present time a population of 120,000. Minneapolis has increased at the same rate. The Province of Manitoba and the Northwest Territory had, according to the census of 1881, a total population of 122,400, and the actual population at the present time is not more than 200,000, an increase of less than the two towns, Saint Paul and Minneapolis. I will give another illustration of the relative wealth of Minnesota and all the Canadian Northwest provinces: This year the wheat crop of the State of Minnesota amounted to 40,000,000 bushels, or an increase, as compared with the preceding year, of 8,000,000 bushels; the total wheat crop of the Canadian Northwest this year is estimated at 8,000,000 bushels. At Minneapolis the milling interest alone consumes every day about 80,000 bushels of wheat. The whole estimated surplus of wheat in the Canadian Northwest would supply the mills only 53 days. The Minneapolis merchants admit that the natural outlet of any surplus of grain from the Canadian Northwest must for the present be at Fort Arthur or Duluth. The only trial ever made to ship wheat from Manitoba to Minneapolis consisted of 75,000 bushels brought to the Pillsbury mill during the year 1882, but the high rate of freight, together with the tiresome custom-house regulations, in regard to the imports of grain and the drawbacks on the exports of flour

manufactured from the imported grain, made the experiment so unsatisfactory that it was resolved not to try it again, and the millers of Minnesota do not look for an increase of the wheat trade with the Canadian Northwest as long as these regulations are in force.

WHEAT CROP OF MINNESOTA.

The estimate of the wheat crop of Minnesota during this year is 40,000,000 bushels, and of the corn crop 24,000,000 bushels. The low price of grain is agitating the farmers, but the total value of the wheat and corn crop of Minnesota for 1884 will be $46,080,000, against $45,600,000 in 1882. In 1882 the total wheat crop of Minnesota was 32,000,000 bushels, and the corn crop 16,000,000, in round numbers. The average yield of wheat was estimated to be about fifteen bushels per acre. This year the total wheat crop shows an increase of 8,000,000 bushels and the total corn crop the same. Hard wheat sold at $1.08 in September, 1882; declined to $1.05 in October, and remained nearly stationary at that price till the close of the year. The value of the entire wheat crop that year was $33,600,000. In 1882 corn sold at an average price of 75 cents per bushel, which made the total value of that crop $12,000,000. The total income from wheat and corn in Minnesota for that year was $45,500,000. At present prices, wheat 84 cents and corn 52 cents per bushel, the value of this year's crop, will be $46,080,000, or nearly the same as that of 1882.

PRICES OF OTHER FARM PRODUCTS NOT DECREASED.

The prices of other farm products have not decreased; barley is worth as much now as in 1882, and flax-seed is worth 10 cents a bushel more. Cattle are higher and hogs are about the same as last year; taking into consideration the greatly increased yield of crops of all kinds, and the comparatively small differences in price of everything except wheat, the farmers of Minnesota will receive more money for their products than ever before.

On the other hand, the prices of all staple necessities of life have steadily decreased during the past five years. In 1882 lumber was from 20 to 25 per cent. dearer than now. Hardware has declined from 25 to 30 per cent. in value. In clothing there is a difference of about 15 per cent. in favor of the purchaser, and heavy flannels and woolen goods have declined fully that much since 1882. Inquiry and comparison show that almost every article of household use is from 10 to 15 per cent. cheaper than two years ago.

Machinery is one of the heaviest items in the farmer's expenses, and a reduction in the cost of the implements necessary to carry on his work successfully, is quickly felt. The cost of all farm machinery is from 12 to 30 per cent. less than in 1882.

A large item in the expense of the farmer on the wide prairies is fuel. Very little wood is used, and coal has to be brought a long distance. The figures show that the reduction in hard and soft coal and wood, since the winter of 1882, is a little more than 5 per cent.

The reduction of about 5 per cent. in freight, which has been made on all Northwestern roads to local points is also an important item. This reduction applies both ways. In the first place the farmer can send his farm products to market nearly 10 per cent. cheaper than he could two years ago, and his lumber, coal, groceries, and everything else he has to buy is delivered to him about 5 per cent. cheaper. The local dealer can now buy his goods in Saint Paul and Minneapolis 15 to 20 per cent. cheaper, and has to pay 5 per cent. less freight than in 1882. He can thus give his customers the benefit of the difference in freight and still make as much profit as before.

WINNIPEG PRICES.

Under the impulse of a "boom" created through the newspapers, official publications, and enthusiastic speeches in the House of Commons, aided by the efforts of the Canadian Pacific Railway, and the inevitable reaction therefrom, the business throughout the British Northwest has proved to be very unsatisfactory. Prices of all merchandise are higher than in the United States. Anthracite coal remained unchanged at $14.25; Saskatchewan is $10 per ton delivered. Beef, veal, and vegetables are found generally in good supply and moderate prices, but pork, mutton, poultry, and eggs are scarce and prices high. Agricultural implements, canned goods, clothing, hardware, &c., have to pay an average duty of 35 per cent. The people in the Canadian Northwest are forced to get their supplies from Quebec and Ontario, and even with reduced railroad freight prices are considerably higher than they would be if bought at Saint Paul or Minneapolis and shipped by the Saint Paul, Minneapolis and Manitoba Railway.

GOING TO DAKOTA.

It is difficult to gain in Manitoba any reliable information in regard to the emigration to the United States, but the following figures are taken from official sources and will show the extent of the exodus. By the census of 1881 the total population of Manitoba and the Northwest Territories was 122,400. In the year 1880–'81 the Immigration Department returns give the number of immigrants into the whole Northwest at 25,000, of whom it is fair to estimate that 10,000 came in after the taking of the census. In 1881–'82 the number of "permanent settlers" coming in is given by the Department at 58,751, and in 1882–'83 at 42,772, 10 per cent. having first been deducted in each case for "floating population." For 1883–'84 the departmental estimate is 30,000 at least. Adding all these together we find that the total population of the Canadian Northwest should have been, on the 30th of June last, 264,000 in round numbers. A liberal estimate of the actual population at the present time is 200,000. Public opinion admits fully that if a census were taken it would be found not to reach that number. Where, then, are the other 64,000 persons who, according to the returns of the Immigration Department, have permanently settled in the Northwest? The answer must be, "Gone to Dakota!" At all events, there can be no mistake about their having left the Northwest. It is charged that the blame for this exodus attaches to the Dominion Government. The emigrants have, with very few exceptions, always expressed themselves as satisfied with the natural advantages of the Northwest and the superiority of its soil, but the railway policy, the fiscal policy, and the land policy of the Ottawa ministers have been too strong a combination for nature and the Immigration Department to fight against.

In Manitoba they hope that the grand results of this season's farming operations will do a good deal to counteract the encouragement which is still given to "going to Dakota" and to afford a great impetus to next year's immigration; but even nature's kindly efforts will not confer much benefit to many settlers, who, by reason of the great distance to the market, are not in a position to profit by the favorable season. Some of these may be willing to remain for another year in the hope of obtaining railway facilities, but there are many who have become so discouraged by their long waiting that they will not stay.

The Dominion Government must give more encouragement to the building of "colonization railways" and change the tariff policy, which operates as a constant stimulus to emigration to the United States and prevents a contentment of the farmer before the talk of "going to Dakota" will subside.

THE TARIFF QUESTION.

The Northwest settler pays, through the operation of the tariff, an increased price for every necessary of life. His pork is taxed to benefit the Quebec and Ontario farmers and packers; his canned meats are taxed to benefit the same persons; his lumber is taxed that the Eastern lumbermen may control the market; his coal is taxed to build up Nova Scotia—at least that is the theory—and his agricultural implements are taxed 35 per cent. ad valorem to encourage Ontario industries. But what does the tariff do for him? He produces wheat, barley, and oats. There is a duty of 15 cents per bushel on wheat and barley, and of 10 cents on oats; but, as the prices of these products are always much higher in Saint Paul than in Winnipeg, such protection is worthless, if not wholly absurd.

The report of the special committee appointed at the last session of the Manitoba legislature to investigate this tariff question said:

"In Manitoba, not yet able to produce the necessaries of life, the effect of the present tariff on articles absolutely necessary for settlers bears very heavily upon our people as compared with those who have settled in the older provinces of the Dominion."

RECIPROCITY FEELINGS.

The people of the Canadian Northwest realize strongly the desirability of having the present artificial obstacles to trade with the United States removed. They see the wisdom of buying what they want as cheaply as possible and selling their surplus produce as dearly as they can. They go even further and will scarcely be content with the measure of freedom which is commonly implied in the term "reciprocity." Their interest lies in having perfectly untrammeled commercial intercourse with their next-door neighbors, instead of being obliged to fetch and carry over thousands of miles of land and water. The question of their political relations with the eastern portion of Canada is often raised as a positive barrier to the establishment of such free commercial intercourse. This, however, is no discouragement to the people in Manitoba and the Territories. They know that the removal of the trade restrictions complained of is so necessary to their material welfare that any political question

standing in the way must be swept aside. The people in the Northwest are coming more and more to regard free trade with the United States as a *sine qua non* of their welfare. They do not regard such an establishment of commercial union as fatal to the confederation, but insist that it is the only method by which confederation can be preserved. Their theory is that the members of the confederation must and shall have free intercourse with their natural markets or else the strain on their political relations will be stronger than can be borne.

The Saint Paul Jobbers' Union paid a visit to Manitoba during the month of August, this year, and passed, after their return to Saint Paul, the following resolutions:

"Whereas the commerce of the Province of Manitoba is naturally tributary to the United States, and the productions of the country and the wants of the people are identical with those of Minnesota and Dakota: Therefore, be it

"*Resolved*, That as merchants, we are in favor of the early establishment of reciprocal commercial relations with that Province whereby the present artificial obstructions to trade may be removed and our mutual interests promoted.

"*Resolved*, That all merchants' unions, chambers of commerce, and boards of trade in the Northwest be urged to agitate this important matter until a satisfactory result shall have been accomplished."

The maritime provinces are equally interested in commercial union; but the center of the Dominion is of course opposed to it and so is the powerful Canadian Pacific Railroad interest. Reciprocity with the United States would render completely valueless the whole of the Canadian Pacific Railway from Winnipeg to Pembroke. Not only would the millions expended on the construction of the road be thrown away, but the scheme of a transcontinental railway binding the provinces together as one family would be hopelessly dissipated. The construction of the railway is being rapidly advanced at both ends of the line. All-rail communication between the Northwest and Montreal will be established early next year. The work in the mountains is being rapidly prosecuted and re-enforcements of laborers are being constantly sent forward. No difficulty is anticipated in the completion of the road through the Rocky Mountains with the money advanced by the Dominion Government, believed to be sufficient for that work.

CANADIAN PACIFIC RAILWAY LANDS.

The land department of the Canadian Railway Company, under the direction of assistant land commissioner at Hamilton is extremely active. During the last season the surveyors examined 350,000 acres in Manitoba, and around Maple Creek 1,100,000 acres; towards the Rockies 1,015,000 acres were examined; of this 380,000 acres are classed first-class, 465,000 acres second class, and 170,000 third class. The whole of this section is well watered by the Bow, South Saskatchewan and Red Deer Rivers, and the examiners report an abundance of coal.

EXPERIMENTAL FARMS.

In October, 1883, several experimental farms were established in the region west of Moose Jaw. Farms were established at the following stations: 1, Secretan; 2, Rush Lake; 3, Swift Current; 4, Gull Lake; 5, Maple Creek; 6, Forres; 7, Dunmore; 8, Stair (the two latter being the nearest stations east and west of Medicine Hat, at the crossing of the Saskatchewan River); 9, Tilley, and 10, Gleichen, the last being within view of the Rocky Mountains. Until the establishment of these farms all the land west of Regina, past Medicine Hat and to within a short distance east of Calgary, was considered unfit for agricultural purposes and was classed as a semi-desert. Certainly the land in that region looks anything but inviting to intending settlers. In all directions it is high and rolling, the soil seems light and sandy, vegetation very poor, the absence of all attempts at cultivation is surprising. Station after station the railway train passes, with houses few, and no cultivated fields, no gardens, no potatoes, nothing but a few horses, mounted police, stores, taverns, billiard parlors, &c. The quality of the soil seemed to be such that it was not worth while to attempt anything in the way of cultivation. But the results of the experimental farms show differently. As to the crops there were wheat, barley, and oats in full head; potatoes in bloom and vegetables looking healthy. At Dunmore my entry reads: Sandy soil, and not any better looking than thousands of acres passed by; crops same as before, the only difference is that as we go westward they appear to be earlier. A few miles west of Medicine Hat they are drilling a well; they struck gas and a seam of coal 285 feet from the surface; at 1,500 feet no water. To the vast tract of country east and west of Medicine Hat away from the river, the want of good water must be considered the great drawback, and still the officers of the Canadian Pacific Railway expressed it as their opinion that the territory west of Moose Jaw will yet be the finest agricultural country in the Northwest and the greatest food-producing district in the world.

THE HUDSON BAY AND WINNIPEG RAILROAD.

The proposed scheme of connecting Winnipeg with Hudson Bay by a railroad will probably be carried out. The people hope by this route to receive directly from England the necessaries of life and the needed agricultural implements at less cost than now, via Fort Arthur, from Quebec and Ontario, but it is certain that this railway will never be profitable as a pecuniary investment. With the exception of some imaginary mineral deposits and a short stretch of fertile land immediately north of Winnipeg, there is nothing to yield a local traffic. Most of the promoters of the scheme admit this. Their hope of profit is dependent on the through-traffic between the region west of Winnipeg and Europe. This traffic will consist mainly of grain shipped from the West. How they propose to persuade the Canadian Pacific Railway which gathers up the traffic from all parts of the Saskatchewan to relinquish it at Winnipeg, they do not explain.

In truth, however, the late harvest in the Northwest and the early closing of the navigation in the Bay would force the crop of one year to lie over to the summer of the next, before it would be shipped. The farmers of the Northwest have not the means, nor if they had would it be to their profit to carry their produce for so long a time.

The transportation rates of the Canadian Pacific Railway are lower than those either of the Union Pacific or Northern Pacific railway; yet this proposed route, which cannot have any local traffic, which is closed for at least seven months in the year, is to benefit the Northwest by reducing the Canadian Pacific's rates still further, and is also to return handsome dividends to its stockholders.

The report of the Department of Agriculture and Statistics of the Province of Manitoba for the year 1882 contains the following (page 164):

"The opening of the Hudson's Bay route is the key to the future of this country; when that happens we will be as favorably placed to reach the markets of Europe as any portion of this continent, and though the season for navigation will be short (4 months) an enormous amount of produce can be shipped and the saving in freight thereby gained will be so much money retained in the country. We will then be able to ship store cattle for feeding in England, or fat cattle for the butcher, at a good profit to ourselves."

THE CANADIAN PACIFIC RAILWAY.

The Canadian people entered upon the construction of the Canadian Pacific Railway with the utmost enthusiasm. They believed that the opening of the northwest of Canada would be welcomed by numerous emigrants from Europe, and they regarded the construction of the railway as the only means for Canada to become rapidly a great and prosperous country. The most liberal support of the Dominion was given, and in addition to these, most extraordinary concessions were given from the start. The Government has already further given $30,000,000 on a mortgage on the equipment of the railway.

The first success was flattering; during the years 1881–1883 no less than 149,560 immigrants arrived, against 64,755 during the whole period from 1871 to 1880. The minister of railways, Sir Charles Tupper, estimated that the money amount brought into the Northwest by settlers during the 3 years (1881–1883) at the lowest rate, must be placed at over $15,000,000.

The wildest excitement in regard to the prospects of the Northwest reigned for several years. It was announced that Manitoba and the great Northwest territories would be the great wheat region, not only of British North America, but of the continent itself. Even Mr. Taylor, the United States consul at Winnipeg, and regarded as a high authority, has publicly declared that three-fourths of the wheat area of North America lies to the north of the boundary line.

At Winnipeg, Brandon, Moose Jaw, and along the Canadian Pacific Railway up to Calgary the speculation in real-estate property and land was most extraordinary. At Winnipeg the choice business lots were offered and sold for $2,500 per front foot and prices went up everywhere in proportion. To-day the same lots sold at Winnipeg during the year 1881 for $2,500 per front foot, will not bring $150, and in all towns is felt a similar drawback of the over-reaching boom and the too glorious description of the "unbounded field of development." The emigrants soon were more numerous than the immigrants. Large numbers of houses and stores became empty, and even many farms were abandoned and their owners left for a "climate more congenial."

The fertility of the country cannot be questioned, but the climate is such that an early frost may be expected every year, and the farmer who is not fortunate enough to get the crops in early will annually suffer to a greater or less extent. The crop

year 1883 was the first one allowing an export of breadstuffs from Manitoba; the Northwest Territory imported even during that year from the surplus of the neighboring provinces. The exports from Winnipeg were as follows:

Flour	barrels..	81,150
Wheat	bushels..	1,250,500
Oats	do....	620,000
Barley	do....	27,000

It is estimated that the wheat crop of the present year will be 5,000,000 bushels.

The reports to the Manitoba department of agriculture give 350,000 acres of land as sown with wheat. A low estimate for the territories is 50,000 acres, giving a total of 400,000 acres. If we allow 20 bushels to the acre, we get a total of 8,000,000 bushels. Allowing 3,000,000 bushels for home consumption, we have still 5,000,000 bushels for export—provided an early frost does not spoil the calculations. The farmers intend this year to harvest their wheat before it is "dead ripe." They say that last year, when the frost came, it found a good many fields in which part of the wheat was newly cut lying on the ground or in the stack, while the rest was still standing and that in such cases it was invariably found that the cut wheat had escaped the evil effects of the frost, while the standing grain was damaged, even when very ripe.

It may not be out of place here to show briefly the progress of the seasons and the labors of the husbandman throughout the Northwest. Towards the middle of April the sun dissipates the snow and almost immediately plowing commences. Seeding and plowing go on together as the ground is quite dry, and in a few days the seed germinates, owing to the hot sunshine. By the time the rains and the heat of June have come abundance of roots have formed, and the crop rushes to quick maturity. After the middle of August the rain almost ceases, and for ten weeks scarcely a shower falls, giving the farmer ample time for harvesting. The absence of autumn rains is regarded as a priceless boon, as it enables the farmer to harvest and thrash his grain without injury, and, besides, gives him excellent roads when he needs them most.

The quarterly rainfall in Winnipeg during the year 1883 was as follows: Winter, 0.00; spring, 5.69; summer, 10.52; and autumn, 0.04; inches. The snowfall in inches for the first half year was 28.6; for the second half, 29.7.

The prosperity of Manitoba and the Northwest Territory depends at present upon the wheat crop. How much better if it were different and if all these vast wheat farms were cut up into smaller ones of 160 or 320 acres each—better for farmers, better for the railroads. Where there is so much land all in grain, the farmers' operations are crowded into five months of the year. The other season he lies idle. If his wheat fails his year is lost. By-and-by even the most fertile soil will be worn out without rotation of crops. It seems that the country is adapted to stock-raising. Hogs, sheep, and cattle all do well. They must be housed in winter. As for feed, hay enough is burned every year which, if fed, would realize more money than the wheat brings. Enormous crops of turnips and potatoes can be raised; all kinds of vegetables yield abundantly. Small farms only can bring profits to the railway, and the only true policy of the railroad is to promote population. At present the Canadian Pacific Railway, from Port Arthur to Calgary, cannot pay expenses, having less than 200,000 inhabitants to serve and nothing to export but the surplus of wheat.

LAND GRANT.

The land grant of the Canadian Pacific Railway lies west of the Red River and 24 miles on each side of the main line between Winnipeg and the Rocky Mountains. The first 60 miles near Winnipeg were taken up by settlers and others previous to the chartering of the railroad. It is estimated that the railway belt contains 7,000,000 acres. The Government has granted an additional 2,000,000 acres between the railway-belt and 21 miles from international boundary north. The remainder of land is to be selected between meridians 104 and 115 and parallels of latitude 52 and 54, near the Saskatchewan and Battle River country. The Canadian Pacific Railway grant is confined to the odd-numbered sections; the even-numbered sections are retained by the Government for grants to settlers.

The Canadian Pacific Railway Company have in actual operation about 2,500 miles of railway, of which 330 miles are branches. The link between Port Arthur and the eastern section of the line is not yet completed, but the work of construction is in active progress and will probably be completed during the year 1885. Between Port Arthur and the Red River region the railway runs through a thickly-wooded country; from Winnipeg to the Rocky Mountains it traverses the prairie, and from the eastern base of the mountains to the summit the tamarac tree is sparsely found.

RHODES HOUSE

CONSTRUCTION OF THE CANADIAN PACIFIC RAILWAY.

The work of the construction of the railway itself encountered less difficulty than was at first supposed. The work has been prosecuted with great vigor and only the best material used. The steel rails weigh 56 pounds per yard, and those used in the mountains 75 pounds. The summit of the Rocky Mountains is 5,461 feet high at Stephens, and at the Selkirk Mountains, 4,316 feet. The maximum gradients between Lake Superior and the Rocky Mountains, a distance of nearly 1,400 miles, will not exceed 52.8 feet to a mile, and in the greater portion of the section they will not exceed 40 feet to a mile. From Winnipeg eastward to Thunder Bay the maximum is only 26.4 feet. The heavier gradients are confined to the mountain sections and will not be greater than 4½ to 100.

The distance by the Canadian Pacific Railway from Montreal to Port Moody, its Pacific terminus, will be only 2,904 miles. The distance from Chicago to Port Moody, by the way of Saint Paul and Winnipeg and the Canadian Pacific Railway, will be 2,342 miles against 2,408 miles from Chicago to San Francisco by the Central Pacific railway. By low freight rates the Canadian Pacific Railway managers expect to attract a large portion of the cattle traffic from Montana to the East via Winnipeg and Saint Paul to Chicago, and they even hope to transport a portion of the grain in the upper region of Minnesota via Port Arthur. On the line of the railway are 20 saw-mills with a daily sawing capacity of 1,030,000 feet, 41 grain elevators and storehouses with a capacity of 1,544,000 bushels, and 8 flour and grist mills having a producing capacity of 1,705 barrels per day.

The western branch lines are the Stonewall Branch, 22 miles; the Pembina Branch, 65 miles; the Southwestern Branch, 113 miles; the Selkirk Branch, 22 miles; and the Emerson Branch, 21 miles. Only by the extension of the different branches can the Canadian Pacific Railway hope to dispose of the large tract of land held in the Northwest region, and it was considered of such importance that the railway should be run as far as possible through cultivated lands that the regulations provided for the sale of these lands only to those who were prepared to cultivate at least one-half of the acreage purchased within five years.

MINING PROSPECTS.

The hope of striking bonanzas of gold and silver through the opening of the Canadian Pacific Railway has vanished. It is said that strikes of more or less richness have been made in placer and hydraulic mines in the Selkirk range, but quartz mining requires large capital and a practical knowledge of the business. In their search for gold the miners have discovered vast deposits of galena between the Kicking Horse Creek and the Columbia. Claims to the extent of 17,000 feet have been taken up in one ledge there, which is said to assay from $12 to $20 per ton. The report that tin had been discovered has not been confirmed and may be put down for the present as a "boomster's" fable. On the whole, mining in the Canadian Northwest cannot be said to have been attended with much success. The precious metals may exist in paying quantities, but they cannot be got at without a liberal expenditure.

COAL FIELDS.

Extensive coal fields have been found, but at present the coal supply comes chiefly from the east via Port Arthur. The principal coal fields are on the Bow and Belly Rivers, the Sauris River, the North Saskatchewan, and the South Saskatchewan district. The Saskatchewan Coal Mining Company, whose mines are situated on the Saskatchewan River, 8 miles west of Medicine Hat, have an average output of 150 tons per day, drawn from the pit in half-ton tubs and dumped into the cars ready for shipment, the whole being done by steam power. The coal has found a ready sale at $10 per ton delivered at Winnipeg. West of Calgary several coal fields have been found, and it is said that the coals contained in them are harder and drier in quality; in some places approaching to anthracite.

THE HUDSON'S BAY COMPANY.

In speaking of the development of the Canadian Northwest it would be highly improper not to mention the Hudson's Bay Company, one of the oldest, the largest, and the wealthiest corporations of the world. Its charter was granted in 1670, over two centuries ago, and during all those years the company has been in active business, working on old-fashioned, conservative principles, but keeping well up with the spirit of the times. The Hudson's Bay Company cannot be regarded as an ordinary trading company. Its business is extended all over British North America, and is of a most

complicated kind, necessitating a thorough knowledge of each part in order to carry it on successfully. It requires the knowledge of the business of a great number of portions, a knowledge of the capabilities of the people, of the goods to be sent, and of the quantity and quality of furs purchased from them. The political influence of the company used to be all-powerful and was only superseded by the influence of the Canadian Pacific Railway Company interest. The Hudson's Bay land grants are shown by the maps inclosed.

TIMBER.

Manitoba and the Northwest have been steady importers of lumber. During the year 1882 the Winnipeg dealers handled 70,000,000 feet of lumber, of this about 5,000,000 being imported from Ontario and 15,000,000 from Minnesota. In addition to these quantities about 4,000,000 were imported for the use of the Canadian Pacific Railway. Great efforts are made to encourage the planting of trees, but without any practical result. The Forestry Association has taken a lively interest in this important question, and so has the Bureau of Agriculture, but as yet no good results have been produced. The question of forestry is not only important in regard to the supply of timber for agricultural and building purposes, but also for climatic considerations, and specially in regard to the fuel supply of the farming community, when coal costs $15 to $18 per ton, and when during seven months the thermometer ranges between + 30° and 30° below zero.

CONCLUSION.

The relation of commerce between the United States and the British Provinces of Manitoba and the Northwest Territory will scarcely be improved under the existing laws. Only a liberal reciprocity treaty would enable the Canadian Northwest to profit by its natural advantages and give to the United States the desired occasion for a more extended traffic in that direction. At present the bulk of the exports of the Canadian Northwest will go by the Canadian Pacific Railway via Port Arthur, and it will be extremely difficult for the United States to enter into competition with the Eastern Canadian provinces in sending hardware, canned goods, and agricultural implements to the Northwest under the present tariff. The people in Manitoba and the Northwest Territory are suffering under the existing laws, and they will soon force a change, as indicated above.

APPENDIX No. 60.

INFORMATION FURNISHED BY MR. MORRIS MARCUS, SECRETARY OF THE CHAMBER OF COMMERCE OF SAN FRANCISCO, IN REGARD TO THE COMMERCIAL, INDUSTRIAL, AND TRANSPORTATION INTERESTS OF CALIFORNIA.

CHAMBER OF COMMERCE OF SAN FRANCISCO,
San Francisco, May 29, 1883.

DEAR SIR: I have the honor to transmit herewith the desired data and opinions respecting the commerce of the Pacific coast and the diversion of a portion thereof to the overland route via New Orleans. For the sake of convenience I have numbered the letters addressed to me in relation to the different topics, as well as the corresponding answers, and trust that all will be to your satisfaction.

Very respectfully, yours,

MORRIS MARCUS,
Secretary.

Hon. JOSEPH NIMMO, Jr.,
Chief of the Bureau of Statistics, Washington, D. C.

PRINCIPAL GRADE OF CALIFORNIA WHEAT.

The grade which constitutes three-fourths of our wheat exports is known as California No. 1.

In the Liverpool market it brings sometimes more and sometimes less than Chicago No. 2 spring wheat, the relative prices depending principally upon the relative quantities available for consumption there. California wheat is sought after by foreign millers on account of its superior dryness, whiteness, and sweetness, and is extensively used for mixing with other wheat to improve the quality of their flour.

On an average, California No. 1 and Chicago No. 2 spring wheat command about the same price. The annexed table shows the monthly fluctuations of the Liverpool market for the past five years:

Fluctuations in the closing prices of wheat on the last Tuesday's Liverpool market of each month, as shown by the Corn Association reports.

[Per 100 pounds.]

Month.	Red winter.				No. 2 spring.				Californian (average to Club).			
	Lowest.		Highest.		Lowest.		Highest.		Lowest.		Highest.	
1878.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
January	10	10	12	5	10	7	10	9	12	5	13	1
February	10	10	12	4	10	3	10	6	11	9	12	9
March	10	6	12	4	9	10	10	2	10	11	12	4
April	11	3	12	0	10	6	10	9	11	5	12	4
May	10	9	11	2	9	4	9	6	10	9	11	6
June	9	6	10	3	8	8	8	10	10	3	10	9
July	9	6	10	4	8	10	9	1	10	1	10	9
August	9	2	9	7	9	2	9	4	10	2	10	8
September	8	6	9	0	9	4	9	5	9	9	10	4

Fluctuations in the closing prices of wheat, &c.—Continued.

Month.	Red winter.				No. 2 spring.				California (average to Club).			
	Lowest.		Highest.		Lowest.		Highest.		Lowest.		Highest.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
1878.												
October	8	8	9	2	7	9	8	0	9	7	10	0
November	9	0	9	6	8	4	8	6	9	8	10	2
December	8	8	9	4	7	10	8	2	8	9	9	4
1879.												
January	8	8	9	2	7	10	8	2	8	8	9	2
February	9	0	9	5	8	0	8	2	8	9	9	8
March	9	0	9	6	8	2	8	5	8	10	9	6
April	8	10	9	4	8	1	8	6	8	8	9	5
May	9	0	9	6	8	4	8	6	8	6	9	5
June	9	0	9	6	8	3	8	5	8	2	9	6
July	9	3	9	8	8	10	8	11	8	8	10	6
August	9	0	9	4	8	9	8	10	8	6	10	0
September	10	4	10	9	9	10	10	0	10	0	11	0
October	11	2	11	7	10	9	11	2	10	8	11	1
November	11	2	11	6	10	8	11	0	10	6	11	0
December	11	2	11	10	10	10	11	4	10	10	11	1
1880.												
January	10	6	11	4	10	3	10	6	10	4	11	
February	11	3	12	0	10	11	11	3	10	9	12	
March	10	10	11	9	10	7	11	1	10	5	11	
April	10	0	10	10	9	8	10	1	9	3	10	
May	10	0	10	8	9	6	9	11	9	0	10	
June	9	4	9	9	8	9	9	4	8	4	10	
July	10	0	10	5	8	11	9	2	8	4	10	
August	8	2	9	0	8	10	9	1	8	4	9	10
September	8	6	9	3	8	8	8	10	8	4	9	9
October	9	2	9	5	9	2	9	4	8	6	10	3
November	9	10	10	3	9	7	9	11	9	3	10	6
December	9	6	10	2	9	6	9	10	9	3	10	6
1881.												
January	9	6	10	0	9	4	9	8	9	3	10	2
February	9	2	9	9	9	1	9	6	8	9	9	8
March	9	7	10	1	.....		.....		9	2	9	11
April	9	8	10	0	.....		.....		9	3	9	10
May	9	6	9	8	9	2	9	4	9	3	10	2
June	9	9	10	2	9	4	9	6	9	5	10	2
July	9	10	10	1	9	6	9	7	9	5	10	0
August	10	9	11	3	10	7	10	10	11	0	11	6
September	10	10	11	2	10	6	10	8	11	0	11	7
October	11	2	11	6	10	6	10	7	11	1	11	8
November	10	8	11	3	10	4	10	9	10	8	11	5
December	10	6	11	0	10	5	10	9	10	5	11	1
1882.												
January	10	9	11	3	10	8	10	10	10	5	11	3
February	10	5	11	1	10	0	10	6	9	10	10	6
March	9	10	10	4	9	9	10	4	9	6	10	3
April	10	3	10	6	9	10	10	2	9	10	10	5
May	10	4	10	6	9	7	10	1	9	9	10	3
June	10	4	10	6	9	7	9	10	9	8	10	3
July	10	0	10	2	9	7	9	8	9	10	10	4
August	9	7	10	0	9	6	.....		9	8	10	2
September	9	2	9	3	9	0	9	6	9	1	9	3
October	9	0	9	6	9	0	.....		8	10	9	6
November	9	1	9	6	8	10	9	0	8	11	9	6
December	9	1	9	6	8	10	9	0	8	10	9	5

TONNAGE SUPPLY.

During the years 1878 and 1879 the charters obtained by sailing vessels for grain cargoes from this port to ports in Europe were at unremunerative rates, those to Liverpool direct averaging about 46*s.* per ton. Among the causes of low freights here at that time may be mentioned low freights elsewhere, excess of tonnage at this port, and smallness of margin for profit on grain shipments, California wheat being sold in Liverpool at a lower figure in June, 1879, than ever before.

The wheat crop of California in the year following was an enormous one, far exceeding general expectation; its proportions were not realized until toward the end of the season, and a very large surplus was carried over into 1881.

The fact that California freights had been anything but profitable in the years im

ediately preceding doubtless caused some vessels to seek employment in other parts the world, which circumstance, in connection with the unusual largeness of our crop 1880, resulted in the supply of tonnage at this port proving insufficient for the ovement of said crop.

The direct consequence was a steady advance in freights, and under the increased emand for tonnage many vessels were chartered to arrive at high rates. The freight arket was well sustained until the commencement of 1882, when large arrivals of nnage and a falling off in the European demand for breadstuffs brought about a ecline which continued to the close of that season.

During the past year the supply of tonnage has more than equaled the demand, nd freights have ruled low. In view of the prospect of another enormous crop, the robable surplus of which is estimated at 1,400,000 tons, and of the limited amount of nnage in sight (having a carrying capacity of only 400,000 or 500,000 tons), it is enerally thought that freights will be high and vessels in demand during the autumn nd winter months approaching, in which case considerable quantities of wheat may e shipped by rail to New Orleans for export.

The grain merchants of San Francisco have no fear of a serious lack of tonnage ther this year or in the future. About 500 vessels engage in the California grain ade annually, and large ships are built each year on the eastern coast of the United ates for this trade especially. Numbers of American vessels rendezvous in the waters China and Japan, ready to come here in ballast or with light cargoes whenever grain arters are offered at paying rates. When grain freights are at unsatisfactory rates ese vessels find employment in the trade of China, Japan, and the Philippine Islands. ere is also considerable tonnage on the west coast of South America available for eat cargoes when sufficient inducement is offered.

hips can make a fair profit out of a freight of £2 10*s.* per ton to the United King- n, and as that rate is lower than the railroad rate via New Orleans, there seems to no reason why the tonnage supply at this port should fall off to any serious extent

FREIGHT RATES.

he following statement shows the average rates of freight paid on wheat cargoes n San Francisco to Liverpool direct for each year from 1878 to 1882, inclusive:

Year ended December 31—	Average per ton of 2,240 pounds.	Average per 100 pounds.
	£ *s.* *d.*	*Cents.*
	2 6 5	50.35
	2 5 11	49.81
	2 19 4	64.37
	3 11 0	77.02
	2 12 0	56.41
Acreage	2 14 11¼	59.06

TE.—The pound sterling is valued at $4.86.

computation based upon the actual exports of wheat to Europe by months, and n the average charter rate of vessels dispatched each month to European ports, ws that the amount of freight paid on wheat cargoes from California to Europe ing the year 1882 was £2,268,273. The total amount paid for all freights from ifornia to Europe during the same year was about £2,417,340, of which amount -thirds was paid to foreign ship-owners.

he wheat freights to Europe from Oregon and Washington Territory in 1882 were ut £489,047, and the total amount for all freights to Europe from Oregon and shington Territory in that year was about £683,560, the proportion paid to foreign -owners being somewhat greater than two-thirds.

uring the year 1882 ten vessels were dispatched to New York with general cargo, ing been chartered on private terms for round sums. In addition to these, one sel took a cargo of whale oil to New Bedford and another a cargo of lumber. re is no way of ascertaining the amount of freight paid.

he probable cost of transporting grain to Liverpool via New Orleans during the ing season will be about $12 per ton of 2,000 pounds.

he only large lot of wheat shipped by the overland route last year was taken at

$15 per ton, which was equivalent to a high freight (nearly £3 12s.) via Cape Horn, as shown by the following figures:

Freight via New Orleans per 2,000 pounds	$15 00
Add 12 per cent. per long ton	1 80
	16 80

	£ s. d.
Freight via Cape Horn per long ton	3 12 0
Less rebates (commissions) paid by vessel (to charterer, the shipper of cargo 1¼ per cent.,* to consignee of cargo 2½ per cent.)	2 8
Net freight	3 9 4

(£3 9s. 4d. equal to $16.85.)

RAILROAD COMPETITION.

In the spring of 1882, pervious to the establishment of rail connection with New Orleans, the anticipation of railroad competition did contribute to bring down ocean rates; but the primary causes of the decline were, as stated, an excessive supply of tonnage and a falling off in the European demand for breadstuffs. Inasmuch as but one cargo has been shipped by rail, and at a rate considerably higher than the ordinary rates by sea, it can hardly be said that the competition offered by the Southern Pacific Railroad since its line was opened to New Orleans has had a controlling influence over ocean rates. It is beyond a doubt, however, that the railroad will serve to prevent a return to unreasonably high rates by sea, and in this way will be a source of special benefit to the farmers of California.

The following statement shows the average rates per ton at which vessels have been chartered for the United Kingdom during the crop year 1882–'83:

Month.	Iron vessels, per ton.	Wooden vessels, per ton.
	£ s. d.	£ s. d.
July	2 14 1	2 9 6
August	2 19 1	2 13 0
September	2 13 1	2 11 9
October	2 9 4	2 3 1
November	2 5 6	2 2 7
December	2 3 11	1 19 9
January	2 0 10	1 17 9
February	2 0 10	1 14 11
March	2 1 8	1 19 3
April	2 1 2	1 18 9

In considering the relative merits of the two routes, a brief statement of the prominent features of the sailing-vessel system may not be out of place.

A vessel being chartered for a cargo of wheat to Cork, the shipper has the choice of five loading ports adjacent to the bay of San Francisco. The loading completed, bills of lading signed and vessel cleared, her cargo can be placed on the Liverpool market for sale at once, or can be held until the most favorable moment for disposing of it. A cargo can be sold and resold a dozen times before the vessel reaches the port of call, and then the last purchaser has his choice of all the ports in the United Kingdom or on the Continent between Havre and Antwerp, to any one of which he can order the vessel to proceed.

The length of the voyage around the Horn, averaging 125 days, is not regarded as a drawback, but rather as a benefit to dealers, and the facility with which cargoes can be made to change hands under this system makes it highly valued and generally preferred by grain dealers, millers, and speculators. The average freight by sea being lower than via New Orleans, and the conditions of shipment being more favorable for speculation, it is the opinion of dealers in this city that wheat shipped via Cape

* Upon signing a charter-party, the charterer is entitled to a commission of 5 per cent. on the estimated freight, which commission is divided as follows: One-fourth to the owners of the vessel, one-fourth to the agent of the vessel, one-fourth to the broker negotiating the charter, and one-fourth to the charterer. As the charterer is at liberty to make his own terms with the broker he employs, lower rates of brokerage than 1¼ per cent. are not uncommon.

Horn can generally be dealt in more advantageously in Liverpool than could be expected by the New Orleans route.

There may be certain times when speed would be a great consideration, in order that advantage might be taken of a temporary scarcity of wheat in foreign markets. In such emergencies it is probable that the Southern Pacific Railroad Company will convey a portion of our crop to Europe. At the present time, however, cargoes nearly due off the coast of the United Kingdom do not command so good a price as those just shipped and not due for four or five months to come.

At some future day it is possible that grain elevators will be constructed in the San Joaquin Valley for the purpose of facilitating shipments in bulk via New Orleans. In that case the saving of the cost of sacking and of transportation to the Pacific seaboard would make quite an item in favor of the overland route.

For the present it seems probable that the shipment of California wheat via New Orleans and the rate to be charged therefor will depend upon the tonnage supply here and the rate of freight via Cape Horn. Unless ocean freights much exceed £3 per ton, it is not likely that our grain will be shipped via New Orleans to any extent.

The farmers of California are, or have been hitherto, entirely dependent upon the grain shippers of San Francisco for the sale of their wheat to consumers in Europe, and the grain shippers, as already stated, prefer the Cape Horn route, principally for speculative reasons. Should the Southern Pacific Railroad Company be able to establish a new system of business, whereby the large European millers might obtain their supply of California wheat from the producers direct, or should the company successfully inaugurate a system of grain shipment for the farmers' account, there is a strong probability that the exportation of California wheat via New Orleans would assume large proportions. By the overland route the saving of time, interest, and insurance would amount to about 2½ per cent. of the original cost of the wheat, besides which the expense of bags would not be necessary after the construction of elevators along the line of the railroad. Under the system or systems suggested the California farmers and the European millers would receive the benefit of profits which now accrue to intermediate parties, and a large development of agricultural lands would soon take place in the San Joaquin Valley and other portions of the State traversed by the Southern Pacific Railroad.

WHEAT PRODUCTION.

The acreage seeded to wheat in California for the last five years has been, approximately, as follows:

Year.	Acreage.	Yield.
		Short tons.
1879	2,496,000	920,000
1880	2,837,000	1,710,000
1881	2,908,000	1,110,000
1882	3,031,000	1,120,000
1883	3,350,000	*1,700,000

*Estimated.

In the opinion of Messrs. White & Lessak, grain brokers, of San Francisco, who have made a special study of the matter, the future increase in acreage will be from 10 per cent. to 12½ per cent. per annum for many years. The rate of production will depend principally upon the amount of rainfall. Under favorable conditions, the yield of the State will average fifteen to twenty bushels per acre.

Concerning the undeveloped possibilities of Oregon, the following extract from the latest report of the Portland Board of Trade is of interest:

"Not one-fifth part of our cultivatable lands have as yet been brought under cultivation. With the numerous ramifications of our railroad system which are now being pushed to the outer verge of the vast region tributary to Portland, it is safe to say that from this time forward we can confidently expect a large annual increase in our grain trade. At present we have not more than two persons to the square mile in the basin of the Columbia River; but the rate at which immigration is now setting in this direction justifies our prediction of a vast development of our agricultural wealth in the near future."

Washington Territory has not yet entered the field as a direct exporter of her own wheat, but in course of time will doubtless come forward.

COST OF PACIFIC COAST AND MISSISSIPPI VALLEY WHEAT.

It is difficult to give a definite opinion as to the relative cost of producing wheat on the Pacific coast and in the States east of the Rocky Mountains. In this State the wages of farm hands are very much higher than in the East, and farmers here have the additional expense of grain bags, as no shipments are made in bulk. On the other hand, the soil of California is more easily cultivated, and does not require the extensive fertilizing that is necessary in the East. We thus have the advantage in respect to *the amount of labor needed*, and probably can produce wheat on our largest and most fertile farms at a lower cost than in the Mississippi Valley.

The relative value of Pacific coast wheat and Mississippi Valley wheat in the Liverpool market is exhibited in the table of fluctuations before mentioned. In this connection, a comparison of prices in the home markets of San Francisco and Chicago, together with the average rates of freight from each of those cities to Liverpool, may be of interest.

The following tables show the weekly prices of wheat per 100 pounds in San Francisco, for the years 1878 to 1882, inclusive. It will be found that the cost of California wheat on reaching Liverpool was about the same as that of Chicago No. 2 spring wheat, freight added, and the average prices obtained in Liverpool, as before stated, were not materially different for the two kinds:

Weekly wheat quotations in San Francisco.

Date.	Range of prices.	Date.	Range of prices.	Date.	Range of prices.	Date.	Range of prices.
1878.		1879.		1880.		1881.	
Jan. 3	$2 10 to $2 35	Jan. 2	$1 77½ to $1 67½	Jan. 1	$2 00 to $2 10	Jan. 6	$1 47½ to $1 52½
Jan. 10	2 15 2 40	Jan. 9	1 75 1 65	Jan. 8	2 00 2 10	Jan. 13	1 40 1 42½
Jan. 17	2 15 2 30	Jan. 16	1 75 1 67½	Jan. 22	1 75 2 05	Jan. 20	1 30 1 40
Jan. 24	2 05 2 25	Jan. 23	1 80 1 72½	Jan. 29	1 85 2 00	Jan. 27	1 32½ 1 40
Jan. 31	1 90 2 10	Feb. 6	1 75 1 67½	Feb. 5	1 85 2 00	Feb. 3	1 27½ 1 35
Feb. 7	1 90 2 10	Feb. 13	1 75 1 65	Feb. 12	2 00 2 05	Feb. 10	1 30 1 32½
Feb. 14	1 90 2 05	Feb. 20	1 72½ 1 65	Feb. 19	1 90 2 00	Feb. 17	1 30 1 37½
Feb. 21	1 90 2 10	Feb. 27	1 72½ 1 65	Feb. 26	1 87½ 1 97½	Feb. 24	1 30 1 37½
Feb. 28	1 90 2 05	Mar. 6	1 72½ 1 67½	Mar. 4	1 92½ 2 00	Mar. 3	1 35 1 45
Mar. 7	1 90 2 05	Mar. 13	1 72½ 1 65	Mar. 11	1 90 1 95	Mar. 10	1 32½ 1 40
Mar. 14	1 75 1 95	Mar. 20	1 70 1 62½	Mar. 18	1 85 1 97½	Mar. 17	1 35 1 42½
Mar. 21	1 80 1 95	Mar. 27	1 70 1 62½	Mar. 25	1 90 2 00	Mar. 24	1 35 1 45
Mar. 28	1 85 2 00	Apr. 3	1 75 1 67½	Apr. 1	1 87½ 1 95	Mar. 31	1 35 1 42½
Apr. 4	1 95 2 15	Apr. 10	1 70 1 65	Apr. 8	1 80 1 92½	Apr. 7	1 35 1 42½
Apr. 11	1 95 2 15	Apr. 17	1 65 1 60	Apr. 15	1 75 1 85	Apr. 14	1 32½ 1 40
Apr. 18	1 85 2 15	Apr. 24	1 65 1 60	Apr. 22	1 70 1 80	Apr. 21	1 32½ 1 42½
Apr. 25	1 85 2 15	May 1	1 65 1 60	Apr. 29	1 65 1 72½	Apr. 28	1 35 1 42½
May 2	2 00 2 15	May 9	1 65 1 60	May 6	1 60 1 70	May 5	1 37½ 1 42½
May 9	2 00 2 15	May 15	1 67½ 1 62½	May 13	1 60 1 70	May 12	1 37½ 1 42½
May 16	1 90 2 10	May 22	1 72½ 1 65	May 20	1 57½ 1 65	May 19	1 37½ 1 42½
May 23	1 80 2 10	May 29	1 67½ 1 62½	May 27	1 55 1 65	May 26	1 37½ 1 45
May 30	1 75 2 00	June 5	1 70 1 62½	June 3	1 55 1 65	June 2	1 37½ 1 42½
June 6	1 75 1 85	June 12	1 75 1 67½	June 10	1 55 1 62½	June 9	1 37½ 1 42½
June 13	1 75 1 85	June 19	1 72½ 1 65	June 17	1 50 1 60	June 16	1 37½ 1 42½
June 20	1 75 1 85	June 26	1 72½ 1 67½	June 24	1 55 1 62½	June 23	1 37½ 1 42½
June 27	1 65 1 82	July 3	1 72½ 1 65	July 1	1 55 1 67½	June 30	1 35 1 42½
July 4	1 65 1 80	July 10	1 75 1 67½	July 8	1 50 1 60	July 7	1 35 1 42½
July 11	1 65 1 70	July 17	1 75 1 67½	July 15	1 45 1 57½	July 14	1 37½ 1 42½
July 18	1 65 1 77½	July 24	1 85 1 70	July 22	1 50 1 52½	July 21	1 37½ 1 42½
July 25	1 65 1 75	July 31	1 80 1 70	July 29	1 40 1 55	July 28	1 40 1 45
Aug. 1	1 65 1 75	Aug. 7	1 77½ 1 67½	Aug. 5	1 50 1 63½	Aug. 4	1 40 1 47½
Aug. 8	1 50 1 75	Aug. 14	1 75 1 65	Aug. 12	1 40 1 57½	Aug. 11	1 47½ 1 55
Aug. 15	1 50 1 75	Aug. 21	1 70 1 62½	Aug. 19	1 40 1 55	Aug. 18	1 52½ 1 62½
Aug. 22	1 50 1 80	Aug. 28	1 72½ 1 65	Aug. 26	1 37½ 1 47½	Aug. 25	1 62½ 1 70
Aug. 29	1 40 1 80	Sept. 5	1 75 1 67½	Sept. 2	1 32½ 1 50	Sept. 1	1 65 1 72½
Sept. 5	1 40 1 80	Sept. 11	1 75 1 67½	Sept. 9	1 30 1 45	Sept. 8	1 60 1 65
Sept. 12	1 40 1 70	Sept. 18	1 77½ 1 70	Sept. 16	1 32½ 1 40	Sept. 15	1 65 1 72½
Sept. 19	1 40 1 75	Sept. 25	1 90 1 80	Sept. 23	1 30 1 45	Sept. 22	1 62½ 1 70
Sept. 26	1 40 1 75	Oct. 2	1 90 1 80	Sept. 30	1 35 1 45½	Sept. 29	1 65 1 72½
Oct. 3	1 40 1 75	Oct. 9	1 97½ 1 87½	Oct. 7	1 37½ 1 45	Oct. 6	1 70 1 77½
Oct. 10	1 40 1 70	Oct. 16	2 00 1 90	Oct. 14	1 42½ 1 55	Oct. 13	1 65 1 72½
Oct. 17	1 35 1 70	Oct. 23	2 25 2 00	Oct. 21	1 40 1 52½	Oct. 20	1 67½ 1 75
Oct. 24	1 35 1 70	Oct. 30	2 07½ 2 00	Oct. 28	1 42½ 1 52½	Oct. 27	1 70 1 77½
Oct. 31	1 30 1 70	Nov. 6	2 07½ 1 97½	Nov. 4	1 42½ 1 52½	Nov. 3	1 70 1 76½
Nov. 7	1 40 1 80	Nov. 13	2 05 1 95	Nov. 11	1 40 1 52½	Nov. 10	1 70 1 76½
Nov. 14	1 35 1 75	Nov. 20	2 07½ 1 97½	Nov. 18	1 40 1 55	Nov. 17	1 70 1 76½
Nov. 21	1 35 1 75	Nov. 27	2 10 2 00	Nov. 25	1 47½ 1 57½	Nov. 24	1 65 1 71½
Nov. 28	1 35 1 75	Dec. 4	2 12½ 2 00	Dec. 2	1 45 1 57½	Dec. 1	1 60 1 67½
Dec. 5	1 40 1 80	Dec. 11	2 12½ 2 00	Dec. 9	1 42½ 1 55	Dec. 8	1 60 1 67½
Dec. 12	1 40 1 80	Dec. 18	2 10 2 00	Dec. 16	1 45 1 55	Dec. 15	1 60 1 65
Dec. 19	1 40 1 75	Dec. 25	2 07½ 1 95	Dec. 23	1 40 1 52½	Dec. 22	1 55 1 60
Dec. 26	1 40 1 75	Dec. 31	2 12½ 2 00	Dec. 30	1 42½ 1 50	Dec. 29	1 55 1 62½

Weekly wheat quotations in San Francisco—Continued.

Date.	Range of prices.		Date.	Range of prices.		Date.	Range of prices.		Date.	Range of prices.	
1882.			1882.			1882.			1882.		
Jan. 5	$1 65	to $1 67½	Apr. 6	$1 60	$1 62½	July 6	$1 67½	$1 70	Oct. 5	$1 65	$1 70
Jan. 12	1 69	1 70	Apr. 13	1 57½	1 60	July 13	1 70	1 72½	Oct. 12	1 65	1 67½
Jan. 19	1 67½	1 70	Apr. 20	1 60	1 62½	July 20	1 70½	1 72½	Oct. 19	1 65	1 67½
Jan. 26	1 65	1 70	Apr. 27	1 62½	1 65	July 27	1 72½	1 75	Oct. 26	1 65	1 70
Feb. 2	1 65	1 67½	May 4	1 67½	1 70	Aug. 3	1 72½	1 75	Nov. 2	1 65	1 67½
Feb. 9	1 65	1 70	May 11	1 67½	1 70½	Aug. 10	1 70	1 72½	Nov. 9	1 65	1 68½
Feb. 16	1 60	1 65	May 18	1 70	1 72½	Aug. 17	1 65	1 67½	Nov. 16	1 65	1 70
Feb. 23	1 62½	1 65	May 25	1 70	1 72½	Aug. 24	1 65	1 67½	Nov. 23	1 70	1 75
Mar. 2	1 62½	1 65	June 1	1 70	1 72½	Aug. 31	1 67½	1 70	Nov. 30	1 70	1 75
Mar. 9	1 60	1 65	June 8	1 67½	1 70	Sept. 7	1 65	1 67½	Dec. 7	1 68¾	1 72½
Mar. 16	1 62½	1 66¾	June 15	1 67½	1 70	Sept. 14	1 67½	1 70	Dec. 14	1 73¾	1 76¼
Mar. 23	1 60	1 62½	June 22	1 65	1 70	Sept. 21	1 67½	1 70	Dec. 21	1 75	1 77½
Mar. 30	1 57½	1 60	June 29	1 67½	1 70	Sept. 28	1 65	1 70	Dec. 28	1 75	1 77½

Average freight to Liverpool.

	Cents.
1878	$50\frac{34}{100}$
1879	$49\frac{81}{100}$
1880	$64\frac{27}{100}$
1881	$77\frac{3}{100}$
1882	$56\frac{41}{100}$

TONNAGE STATISTICS.

With the exception of a cargo or two of spars from Puget Sound, the eastward domestic trade via Cape Horn has been limited for some years to one line of ships plying between San Francisco and New York, and an occasional cargo of whale oil shipped to New Bedford.

The tonnage of vessels cleared from Pacific coast ports for domestic Atlantic ports during the last three fiscal years, amounted to 14,223 tons in 1879–'80, to 17,379 tons in 1880–'81, and to 10,166 tons in 1881–'83.

The total weight of commodities shipped by sea from the Pacific coast to points eastward during the year 1881–'82, including shipments via Panama, was 2,870,970,000 pounds.

The amount of California through freight carried by the Central and Union Pacific Railroads to and from points as far east as the Missouri River during the year 1882, was 330,636 tons, of which 132,629 tons were eastbound, and 198,007 tons westbound.

HOME CONSUMPTION OF FLOUR.

The estimated home consumption of wheat flour is one barrel for every inhabitant, that is to say, about 1,000,000 barrels per annum for the territory supplied by California, which includes Nevada, Arizona, and Montana. Our millers look forward to the building up of a flour trade in New Mexico and Texas also.

The increase of our home demand will keep pace with the increase of population until such time as Montana and other Territories shall raise their own wheat and manufacture their own flour.

MEXICAN DEMAND.

In regard to the Mexican demand for wheat and flour, very little is expected. Even if the prohibitory tariff on those articles were abolished, it is not thought by our millers that the consumption would be largely increased, as the sultry climate of Mexico and the mode of life of its inhabitants tend to create little demand for flour and other substantial articles of food extensively used by the people of the United States and other northern countries. The natives of Mexico subsist upon the cheap produce of their own land, and cannot afford the expense of imported flour.

CALIFORNIA GRAIN FLEET.

Of the entire fleet employed in carrying grain from California to the United Kingdom and continental Europe a large proportion return to San Francisco with English cargoes of coal, pig iron, tin, general merchandise, &c.

A large proportion also take cargoes of general merchandise from England t Australia, thence bringing coal to this port. Many American ships, after dischargin their grain, cross the Atlantic to New York, Philadelphia, or other domestic port and there load railroad iron or general cargo for the Pacific coast. Others take coa or general merchandise from ports in the United Kingdom to Calcutta, Bombay, o Hong-Kong, thence proceeding to this port with light cargoes or in ballast.

In brief, the vessels of the fleet take whatever employment is offered at fair rates and find their way to California from various parts of the world in time to engage i the carriage of the succeeding crop.

Of the total grain fleet of California during the year 1882, amounting to 628,38 tons, the arrivals were from the following countries and quarters of the globe:

	Tons.
British India and the East Indies	6,641
China and Japan	33,713
Australasia	132,939
Hawaiian Islands	5,371
British Columbia	14,981
Coasting voyages	1,332
Mexico and Central America	10,921
South America	49,416
South Africa	1,716
The Eastern coast of the United States	92,309
Europe direct	279,041
Total	628,380

The cost of maintaining such a fleet cannot be estimated accurately, owing to the inequality of port charges in various places, and to other circumstances. Each vessel's outlay is determined by the port or ports visited, the size, flag, and sailing qualities of the vessel, and the nature of the cargoes carried. It is roughly estimated, in a general way, that a ship of average size—say 1,200 tons register—incurs a monthly expense of $1,500, when actively employed, which is equivalent to $15 per ton register per annum. The movements of large vessels would cost less, per ton register, while those of smaller ones would cost relatively more.

Upon the basis of an average annual expense of $15 per ton register, the cost of the movements of the California grain fleet of 1882 around the world, occupying about one year, would be in the neighborhood of $10,000,000. This sum does not include insurance, interest, or depreciation in the value of the vessels, but merely their ordinary disbursements.

ESTIMATED EXPENSES OF AN AMERICAN SHIP OF 1,200 TONS REGISTER, IN MAKING CERTAIN VOYAGES.

I.—*From San Francisco to Liverpool with wheat, thence to Cardiff in ballast, and thence to San Francisco with coal.*

Outward expenses at San Francisco	$4,000
Inward and outward expenses, Liverpool	5,000
Inward and outward expenses, Cardiff	2,000
Inward expenses, San Francisco	4,000
Total for round voyage	15,000

II.—*From New Orleans to Liverpool with cotton, thence to Sydney with general cargo, and thence to San Francisco with coal.*

Outward expenses, New Orleans	$8,000
Inward and outward expenses, Liverpool	5,000
Inward and outward expenses, Sydney	3,000
Inward expenses, San Francisco	4,000
Total	20,000

III.—*From Liverpool to Hong-Kong with coal, and thence to San Francisco in ballast.*

Outward expenses, Liverpool	$4,000
Inward and outward expenses, Hong-Kong	2,000
Inward expenses, San Francisco	2,000
Total	8,000

VALUE, EXPENSES, AND EARNINGS OF THE FLEET.

It is very difficult to estimate the value of the fleet engaged in the California grain trade, owing to the fact that some of the vessels are soft-wood ships, others hard-wood, some iron, and others steel. The cost per ton register also varies with the size of the vessels, and moreover, the rates charged by ship-builders are subject to fluctuation. Assuming the average cost of the construction and equipment of vessels of the fleet, whether wooden or iron, to have been $60 per ton register, the original value of the grain fleet of 1882, aggregating 628,380 tons, was about $37,700,000. Allowance should be made for probable depreciation in value prior to 1882, say 25 per cent., on an average. The net value in 1882 might thus be placed at $28,275,000.

The annual expense of insurance is also a difficult matter to determine, varying with the vessel's class and value, the kind of cargo taken, amount of freight earned, ports visited, &c. Some vessels are insured by the year, and others by the voyage; some for only three-fourths of their value, others for the amount of freight money, in addition to the value of the hull. An average of 7 per cent. per annum on the net value of the fleet would not be excessive.

For interest on the cost of ships 6 per cent. should be allowed.

The average depreciation in value of sailing vessels is at least 5 per cent. per annum. Owners of wooden ships sometimes allow 7½ per cent. or even 10 per cent. in the case of their vessels.

The following estimate is supposed to cover all items of expense connected with the grain fleet of 1882 for a period of one year:

Ordinary disbursements	$10,000,000
Insurance, 7 per cent, on $28,750,000	1,979,250
Interest, 6 per cent., on $28,750,000	1,696,500
Depreciation, 5 per cent., on $28,750,000	1,413,750
Total	15,089,500

The amount paid for all freights from California to Europe during the year 1882 was about £2,417,340, and for grain, flour, and salmon freights from California to ports in South Africa and Australia was about £40,950. Total paid to grain fleet from California, £2,458,290—equal to $11,963,268.

It thus appears that the amount paid for freights from California in 1882 was sufficient to defray about four-fifths of the entire expense of the ships engaged in the business during the year.

The return freights were of course at much lower rates, coal freights from the United Kingdom averaging about 14*s.* or 15*s.* per ton. British vessels taking general merchandise from Europe to Australia, and thence bringing coal to California, received on an average about two-thirds as much for their return freights as for grain freights. American vessels crossing the Atlantic and bringing out domestic cargoes did about as well.

CHARTERS PRIOR TO ARRIVAL.

There is no rule in regard to the length of time prior to arrival at which vessels are chartered by the grain shippers of San Francisco. It ranges from ten days to seven months, being governed chiefly by the state of the English wheat market and by the prospect of tonnage supply.

Before vessels reach Australia from England they may be under engagement for the conveyance of California wheat to Europe. At times vessels remain in Australasian, South American, or Asiatic waters until offered a satisfactory charter. Telegraphic facilities enable ship-owners to make contracts at any moment, and to direct the movements of their vessels accordingly.

The majority of vessels chartered before arrival have been on their way to this port, however, at the time of charter.

The proportion of vessels chartered prior to arrival varies greatly from year to year, having been in 1880 about one-third of the entire fleet, in 1881 more than two-thirds, and in 1882 less than one-sixth. Of the ships now on their way to this port, about one-third are already chartered.

WHEAT IN BAGS.

California No. 1 wheat averages in weight 15 sacks to the short ton, or 133⅓ pounds to the sack. The cost of sacking grain is variable, depending upon the supply of bags, the extent of crops, and existence or non-existence of combinations to control the bag market. Within the last three years the price has ranged from 11¼ cents to 7 cents, the latter figure now prevailing, but being extremely low. Nine cents per bag may be taken as a fair average, on which basis the cost of sacking a ton of wheat, 2,240 pounds, would be $1.51, or about 4 cents per bushel.

Grain of all kinds on this coast is put in bags in the fields at the farmers' expense, not simply for export, but for consumption in the home markets, so the cost of bags may be considered a part of the cost of production rather than a part of the cost of transportation to Europe.

The following table in regard to the consumption of grain-bags in California was compiled and published by Mr. Albert Montpellier, cashier and manager of the Granger's Bank of California.

Total consumption of grain-bags in California, &c., for the last 11 *years, and value of same.*

Years.	Number of bags used each year.	Average price per year.	Total value per year.
1871	5,400,000	12¾	$681,7[illegible]
1872	12,600,000	16½	2,062,5[illegible]
1873	10,328,000	14½	1,497,5[illegible]
1874	15,050,000	12½	1,994,1[illegible]
1875	13,500,000	10¾	1,462,0[illegible]
1876	19,623,000	11½	2,330,2[illegible]
1877	12,376,200	10	1,237,6[illegible]
1878	22,000,000	11½	2,475,0[illegible]
1879	21,017,000	9½	2,075,4[illegible]
1880	34,111,500	10¾	3,539,0[illegible]
1881	31,000,000	8½	2,673,7[illegible]
Total	197,005,700		22,029,0[illegible]

INCREASE IN WEIGHT OF GRAIN DURING THE VOYAGE FROM CALIFORNIA TO EUPOPE.

The weight of California wheat cargoes upon delivery in Europe usually overruns a trifle, owing to absorption of moisture from the atmosphere during the sea voyage. This excess is rarely more than one-half of 1 per cent., and it sometimes happens that there is a slight deficiency instead of an excess.

Floating cargoes are bought and sold on the weight specified in the bills of lading, there being a clause to that effect in all grain contracts. The difference in weight, if any, is, therefore, the gain or the loss of the final purchaser of the cargo.

PREVAILING CUSTOMS IN REGARD TO THE PURCHASE AND SALE OF GRAIN.

On the subject of wheat speculation, to which you refer in your letter of the 17th instant, I may say that under ordinary circumstances there is, in a moral sense, no difference between the purchase of grain that is stored in a warehouse and the purchase of grain that is stored in a ship on its way to Europe. When a ship's cargo is bought, on speculation or otherwise, its value is paid to the seller, and the transfer of the property is actually made. If only pretended sales are to be considered gambling, there is no gambling in our wheat export trade.

That our wheat business is largely speculative, however, cannot be disputed; but the same charge may be brought against wheat business wherever engaged in. If wheat were sold by the producer to the consumer direct there would be little opportunity for speculation, but as the business is now conducted the farmer sells his wheat through a commission merchant to a shipper, who in turn disposes of his cargo to a foreign speculator probably, and it may change hands among speculators a number of times before it reaches port and is finally sold to European millers. The length of the voyage, as already stated, is considered more favorable for speculation than quick time would ordinarily be. You will readily see that under existing conditions the shippers and speculators virtually control the grain business of this State.

There are several reasons why the shippers prefer the ocean route. One is, that they receive a double commission on the freight of the vessels they charter, the first portion of said commission being paid at San Francisco before the vessel sails and the balance at the port of discharge to the charterer's order.

The first portion referred to is nominally 5 per cent., but by a custom of the port one-half of it is refunded to the agent of the ship, who retains one-quarter for his trouble and passes the other quarter to the credit of the owners of the ship. This is a rather roundabout way of adjusting commissions, and could be simplified by paying the charterer 2½ per cent. and the agent 1¼ per cent. for attending to the ship's outward business.

When a shipper employs a broker to charter a vessel for him, the brokerage comes

out of the shipper's share of the 5 per cent. commission. As this brokerage may amount to $250 in the case of a ship of 1,200 tons register, you can see that a grain merchant who dispatches 60 or 80 ships in the course of a season saves a considerable sum by dispensing with the services of brokers. Still, ship-brokers are a convenience, and succeed in doing a good business with shipping-houses, just as merchandise brokers do with mercantile houses.

The custom of paying a nominal commission of 5 per cent. to the charterer appears to be an outgrowth of the old system, whereby a ship wanting employment would engage a shipping agent to obtain for her a miscellaneous cargo, paying for his services a commission of 5 per cent. on the freight list.

The payment of 2½ per cent. commission on wheat freights at destination to the charterer's order is an outgrowth of the custom by which consignees of vessels arriving at this port from domestic, Atlantic, or foreign ports receive 2½ per cent. for collecting the freight money on their inward cargoes. In this connection your attention is respectfully invited to the rates of commission and brokerage prevailing at this port, as specified in the annual reports of this chamber, and also to the terms of the charter-party that was forwarded to you on the 29th of May, especially to its final clauses.

Freight on wheat shipped via Cape Horn is paid upon delivery of the cargo by the final purchaser thereof. It is never paid in advance, and is not considered earned if the ship be lost at sea.

To return to the subject of speculation, you will notice a clause in the charter-party, which reads as follows: "Bills of lading to be signed at any rate of freight, but not less than chartered rate, without prejudice to this charter-party." The ships being bound to carry wheat at the original contract rate, charterers who have secured vessels prior to arrival, at comparatively low rates, can sometimes make large profits by rechartering such vessels to other shippers at a high rate of freight, during a temporary scarcity of tonnage at this port. On the other hand, when vessels are chartered to arrive, at very high rates, an unexpected decline in Liverpool prices, or heavy arrivals of tonnage and consequent lowering of freight rates, may involve the charterer in serious difficulty, and in his uncertainty as to the future course of wheat or of freights he may decide to recharter his vessels to other shippers at a positive loss to himself. To give you an idea of the extent to which freight rates to Liverpool have fluctuated each year, I may say that they ranged from £3 to £1 10*s.* in 1878; from £3 6*s.* 6*d.* to £1 12*s.* 6*d.* in 1879; from £3 14*s.* to £1 14*s.* 6*d.* in 1880; from £4 4*s.* to £2 7*s.* 6*d.* in 1881; and from £3 17*s.* 6*d.* to £1 13*s.* in 1882. It is the uncertainty as to the cost of freights by sea which causes a large percentage of the profits or the losses of grain shippers to be made through the chartering of ships.

COMPARATIVE COST OF TRANSPORTING WHEAT FROM SAN FRANCISCO TO LIVERPOOL BY THE OCEAN ROUTE AROUND CAPE HORN, AND BY THE RAIL AND OCEAN ROUTE VIA NEW ORLEANS.

With regard to the saving which can be effected by the railroad in transporting wheat from the interior direct to New Orleans, and upon which the company counts, I believe, to make up for its low through rate to Liverpool, a case in point is herewith submitted.

The wheat-producers in the vicinity of Fresno, a town in the center of the San Joaquin Valley, have to pay the railroad company $4.10 per ton for carrying their wheat to San Francisco, a distance of 207 miles. If the wheat be shipped direct from Fresno to New Orleans instead of being hauled to San Francisco and back again over the same road, it is evident that the distance saved to the railroad would be 414 miles.

The rate of freight to Liverpool being $12 per ton, of which say $4 is for the steamer from New Orleans, the average per ton per mile by rail from San Francisco to New Orleans is $3\frac{3}{10}$ mills. Now, if the railroad company should charge no more per ton per mile from Fresno direct than from San Francisco to New Orleans, the shorter distance would make no difference in the company's favor, so far as profit per mile is concerned. But the company proposes, in such a case, to charge the local rate ($4.10 per ton for 207 miles) from Fresno to a point 207 miles south of that town, and the average rate of $3\frac{3}{10}$ mills per ton per mile for the remainder of the distance, 2.081 miles. This would make the rate from Fresno $2.76 per ton more than the rate from San Francisco, and still it would be cheaper for the Fresno farmer to ship via New Orleans than via San Francisco and Cape Horn at £2 10*s.* Herewith please find a memorandum showing figures in detail; also a table showing equivalent rates of freight by sail in pounds sterling and United States gold coin, for long and short tons, respectively. Commissions on vessels' freights are usually 3¼ per cent., a broker being employed to negotiate the charter.

WHEAT CARGOES.

Comparison of cost and charges, per ton of 2,000 pounds, from Fresno to Liverpool via San Francisco and via New Orleans:

Via San Francisco.

Cost of 2,000 pounds, at 1.75 f. o. b., at San Francisco	$35 00
Freight, by sail, at £2 10*s.* per long ton, less 3½ per cent. commissions	10 45
Insurance (iron vessels), $35, at 2 per cent., less 10, 5, and 10 per cent	54
Interest, say 4½ months, at 6 per cent., on $35.54	80
Total	46 79

Via New Orleans.

Cost of 2,000 pounds, if delivered at San Francisco	$35 00	
Deduct freight from Fresno to San Francisco	4 10	
		$30 90
Freight to New Orleans:		
First 207 miles (local)	4 10	
Remaining 2,081 miles, at the rate of $8 per ton per 2,495 miles, *i. e.*, at 3$\frac{8}{10}$ mills per mile	6 66	
	10 76	
Freight from New Orleans to Liverpool by steamer	4 00	
		14 76
Insurance, Fresno to Liverpool, $\frac{9}{10}$ per cent. on $30.90		28
Interest, say 1½ months, at 6 per cent., on $31.18		21
Total		46 15

Equivalent rates of freight by sail, in pounds sterling per long ton, and in United States gold coin per short ton, with charterers' commissions deducted.

[The pound sterling is valued at United States standard, $4.8665]

Charter rate per 2,240 pounds.			Equivalent rates per 2,000 pounds, allowing for commissions.	
			With 5 per cent. commission deducted.	With 3½ per cent. commission deducted.
£	*s.*	*d.*		
1	10	0	$6 19	$6 27
1	15	0	7 22	7 32
2	0	0	8 25	8 36
2	5	0	9 29	9 40
2	10	0	10 32	10 45
2	15	0	11 35	11 49
3	0	0	12 38	12 54
3	5	0	13 41	13 59
3	10	0	14 45	14 64
3	15	0	15 48	15 68
4	0	0	16 51	16 73

The full commission of 5 per cent. on ship's freight is received when no broker is employed to negotiate the charter. One-half the commission of 5 per cent. is received at San Francisco, and the other half at port of discharge, the latter portion being the compensation for attending to the ship's inward billing there.

Regarding the steamers to be employed between New Orleans and Liverpool, I understand that the railroad company will not put on a line of its own steamers unless it costs too much to secure the occasional service of vessels seeking employment at New Orleans.

INLAND NAVIGATION OF CALIFORNIA.

There are five points in this harbor where ships of any size can load grain, namely, San Francisco, Oakland, Port Costa, Vallejo, and Benicia. Port Costa is the principal shipping point, and is situated in the northwestern part of Contra Costa County, on

the line of the railroad, and fronting the Strait of Carquinez, near San Pablo Bay. During the year 1882-'83 about two-thirds of the grain ships were loaded at Port Costa, about 15 per cent. at Vallejo, nearly as many at San Francisco, and most of the remainder at Benicia, very few taking in cargo at Oakland. Vessels going to Port Costa, Vallejo, or Benicia usually load a few hundred tons of wheat at San Francisco, by way of "stiffening," before they are towed up the bay to receive their cargoes.

None of the rivers of California are navigable for ships.

The Sacramento River is navigable for barges and steamers of light draught for a distance of about 250 miles at all seasons of the year. During the spring freshets river boats can go still farther north.

The San Joaquin is always navigable for barges and steamers as far as Stockton, a grain-center of considerable importance; and during the stages of high water (caused by heavy rains late in the autumn and by the melting of snow in the spring) steamers can go as far south as Fresno County. A slough leads into the San Joaquin River from Tulare Lake, but is nearly dried up in summer.

A few small streams in the bay counties are navigable, such as Petaluma and Sonoma Creeks, Napa River, &c. No statistics have been compiled that would show the quantity of wheat brought to shipping points in schooners and other small craft, and I am able to present only the following estimates, for the barge and steamer lines, during the harvest year 1882-'83, kindly furnished by Col. G. H. Mendell, from information given him by the secretary of the Stockton Board of Trade and by the assistant superintendent of the Central Pacific Railroad Company's steamers:

Shipments from Stockton.

	Tons.
Wheat and barley	91,000
Flour	47,500

These figures do not include the business of the Upper San Joaquin River.

The movement of wheat on the Sacramento River during the same year was about 112,500 tons.

LOCAL GRAIN TRANSPORTATION.

About two-thirds of the wheat brought to shipping points on the Bay of San Francisco comes by rail and one-third by water. The main line and branches of the Central Pacific Railroad brought to the several grain terminals in 1881 1,205,401,420 pounds and in 1882 1,155,924,120 pounds of wheat. Other railroads, running through the Santa Clara, Salinas, Sonoma, and Russian River Valleys, get a fair share of the grain traffic of those parts. Most of the wheat produced in the bay counties is shipped to market in schooners, while the southern coast counties send their product to this port by the Pacific Coast Steamship Company's line.

All grain raised in the vicinity of Stockton, San Joaquin County, comes down in barges and steamers at a freight of 75 cents to $1 per ton, the rail charge from the same place being $1.50 per ton to Port Costa, or $2 per ton to this city. Farther up the San Joaquin Valley, however, the railroad secures nearly all the traffic, the upper river not being navigable except during freshets. Farmers on the west side of the San Joaquin River have to store their grain until autumn or spring, as they have no way of getting it to market except by the river route, which, as stated, is available only at certain times of the year.

In the Sacramento Valley the farmers ship by water or by rail, as best suits their convenience, those nearest the river preferring the water route. The navigation of the Sacramento River being attended with more or less risk, on account of snags in the river-bed, farmers who ship by water are put to the extra expense of insurance, averaging about 30 cents per ton.

RAIL AND WATER RATES FOR THE TRANSPORTATION OF FREIGHTS.

Referring to your letter of the 27th ultimo, concerning local freight charges on grain, I would say that the distance by rail from Marysville to San Francisco is 142 miles via Benicia, or 192 miles via Stockton and Niles, or 203 miles via Stockton and Port Costa. The rate from Marysville to San Francisco via Benicia is $2.90 per ton, which is equivalent to more than 2 cents per mile; via Stockton it is $3.30, or about 1⅔ cents per ton per mile. The Benicia route is the one generally used, being the shortest and cheapest, but the occasional overflow of the Sacramento River has at times carried away a portion of the road between Benicia and Sacramento, interrupting its traffic. At such times the railroad company has been put to extra expense in bringing grain from the Sacramento Valley to shipping points on the bay by the long route, and on that account there is a difference of 40 cents per ton in tariff rates.

When rail and water lines come into direct competition with each other in the interior of this State, the rates by water are generally about one-third lower than those by rail. In some cases the difference is greater, as at Stockton. The reports of the commissioners of transportation and of the board of railroad commissioners discuss this matter fully.

COAL MINING ON THE PACIFIC COAST.

The only productive coal mines in California are those at Mount Diablo, Contra Costa County. Coal has been found in other parts of the State, but could not be mined profitably. The Mount Diablo coal is a soft lignite, containing a small percentage of sulphur; it burns freely and is used almost entirely for steam purposes, finding ready sale to factories and river steamers. Statistics of the production of these mines are submitted herewith. It is estimated by the agent of the Pittsburgh mine that the supply at Mount Diablo will outlast two or three generations.

Annual receipts of coal at San Francisco.

Year.	Mount Diablo.	Coos Bay.	Bellingham Bay.	Vancouver Island.	Chili.	Australia.	English and Scotch.	Cumberland.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
1860	.....	3,145	5,490	6,655	1,900	7,850	6,640	5,970
1861	6,620	4,630	10,045	6,475	12,495	23,370	23,565	2,975
1862	23,400	2,815	10,050	8,870	5,110	12,590	16,055	4,970
1863	43,200	1,185	7,750	5,745	1,790	16,890	14,660	5,670
1864	50,700	1,200	11,845	12,785	2,323	21,160	18,330	7,275
1865	60,530	1,500	14,446	18,181	1,410	17,610	9,655	4,230
1866	84,020	2,120	11,380	10,852	1,480	53,700	7,400	9,524
1867	109,490	5,415	8,899	14,829	14,949	26,619	7,302	12,177
1868	132,537	10,524	13,866	23,348	8,511	31,590	29,561	2,292
1869	148,722	14,824	20,552	14,880	1,114	75,115	17,386	11,536
1870	129,761	20,567	14,355	12,640	7,350	83,982	31,196	9,322
1871	133,485	28,690	20,284	15,621	4,161	38,942	54,191	6,060
1872	177,232	32,562	4,100	26,008	3,682	115,332	29,190	10,051
1873	171,741	38,066	21,211	31,435	400	96,435	52,616	8,857
1874	206,255	44,857	13,685	51,017	.....	139,109	37,826	15,475
1875	142,808	32,869	10,445	61,072	.....	136,869	57,849	10,328
1876	108,078	41,286	21,335	109,965	3,150	131,695	121,948	12,520
1877	96,172	30,941	10,475	102,421	8,145	100,513	89,362	10,608
1878	122,034	35,124	2,820	140,323	.....	131,678	44,005	8,069
1879	134,435	45,909	.....	160,142	.....	80,175	36,588	1,777
1880	158,723	35,415	.....	169,162	.....	59,872	66,660	20,916
1881	103,055	21,246	.....	158,629	230	126,296	281,313	24,982
1882	113,255	14,533	.....	157,762	580	158,901	188,771	14,860

Year.	Anthracite.	Queen Charlotte.	Sitka.	Seattle.	Rocky Mountain.	Saghalien.	Fuca Straits.	Japan.	Total.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
1860	39,985	.....	.....	.....	.....	.....	.....	.....	77,635
1861	26,060	.....	.....	.....	.....	.....	.....	.....	116,245
1862	36,685	.....	.....	.....	.....	.....	.....	.....	120,545
1863	38,660	.....	.....	.....	.....	.....	.....	.....	135,550
1864	41,680	.....	.....	.....	.....	.....	.....	.....	167,298
1865	22,585	.....	.....	.....	.....	.....	.....	.....	150,147
1866	12,124	.....	.....	.....	.....	.....	.....	.....	192,601
1867	48,518	.....	.....	.....	.....	218	509	.....	248,925
1868	29,592	.....	.....	.....	.....	204	.....	.....	282,025
1869	24,844	.....	.....	.....	.....	.....	.....	.....	328,973
1870	21,320	.....	.....	.....	.....	.....	.....	.....	320,493
1871	7,231	565	18	4,918	1,025	.....	.....	.....	315,194
1872	19,618	.....	.....	14,830	1,862	.....	.....	.....	434,467
1873	18,295	.....	.....	13,572	1,904	.....	.....	50	454,582
1874	14,263	.....	.....	9,027	433	.....	.....	.....	531,947
1875	18,810	.....	.....	67,106	53	.....	.....	.....	538,209
1876	11,871	.....	.....	95,314	226	.....	.....	.....	618,388
1877	21,791	.....	.....	102,333	133	.....	.....	.....	576,760
1878	21,064	.....	.....	116,008	371	.....	.....	.....	626,733
1879	21,982	.....	.....	135,012	.....	.....	.....	.....	618,519
1880	19,629	.....	.....	123,741	.....	.....	.....	.....	654,118
1881	13,697	.....	.....	152,893	.....	.....	.....	.....	899,680
1882	24,996	.....	.....	154,611	.....	.....	.....	.....	882,896

NOTE.—There were received in the years 1877 to 1882, inclusive, from Ione 4,223 tons, Ounalaska 640 tons, Buckeye 41 tons, Carbondale 5,428 tons, Carmel Bay 425 tons, and Tacoma 72,811 tons, which are included in the totals.

The Central Pacific Railroad Company is one of the largest consumers of coal at this port, using various kinds, domestic and foreign. Coals have commanded very high prices in the San Francisco market at times when the tonnage arriving from Great Britain or Australia has been relatively small and foreign coal consequently scarce; and combinations among importers have sometimes compelled the railroad company to pay exorbitant prices for its supply. The company therefore purchased the Carbon Hill mine at Tacoma, Wash., had two steam colliers built (one of which was wrecked) and chartered a few vessels to bring to this port the product of that mine for its own use at a reduced cost.

The mine referred to does not yield enough to supply the requirements of the railroad, and the company therefore is still a purchaser of other coals.

During the year 1882 our receipts of coal were as follows:

		Tons.
Foreign		506,014
Domestic:		
Tacoma	54,627	
All others	322,255	
		376,882
Total		882,896

It will thus be seen that the supply of domestic coal is not at all sufficient for the needs of this market.

FOREST PRODUCTS OF THE PACIFIC COAST.

California has an abundant supply of redwood, forests of which are found in all the coast counties north of Santa Cruz. Sugar pine is found in limited quantities in the Sierra Nevada Mountains; cedar in the northern part of the State near the ocean; and spruce in Humboldt and Del Norte Counties, used exclusively for box-making and dunnage.

"Oregon pine" in large quantities is brought here from Puget Sound, besides spruce and cedar from the coast of Oregon.

The following statistics, compiled by the secretary of the Pine Manufacturers' Association, show our receipts of lumber in 1882:

Lumber receipts at San Francisco for the year 1882.

REDWOOD.		
Rough, feet	49,594,989	
Rough clear, feet	6,651,602	
Dressed, feet	38,776,195	
Dressed, ½-inch, feet	97,994	
Siding, ½-inch, feet	227,855	
Battens, ½-inch, feet	218,850	
Pickets, rough, feet	1,247,931	
Pickets, dressed, feet	450,108	
		97,265,434
PINE.		
Rough, feet	117,585,612	
Dressed, feet	13,303,468	
Fencing, feet	7,949,319	
Pickets and wool slats, feet	142,497	
		131,980,896
SPRUCE.		
Rough, feet	20,410,573	
Dressed, feet	769,217	
		21,179,790
CEDAR.		
Rough, feet		3,264,660
HARD WOOD.		
Feet		408,034
Total		254,098,814

SUNDRIES.

Shingles, number	132,102,250
Laths, number	32,881,300
Shakes, number	10,289,500
Ship knees	1,317
Piles, linear feet	848,614
Redwood posts	556,479
Railroad ties, rift	2,636,957
Broom handles	611,300
Wool slats, pieces	270,250
Spanish cedar logs	3,655
Spars, linear feet	52,232
Poles, number	48,351

COMPARATIVE QUALITIES OF CALIFORNIA AND MINNESOTA FLOUR.

California flour will not make as many pounds of bread to the barrel as can be made from Minnesota flour, because our wheat contains a smaller percentage of gluten. The flour that contains the most gluten will absorb the most water, make the most dough, and consequently yield the greatest number of pounds of bread.

Mr. Pekar, who is considered in England the best authority on this subject, estimates the average increase in the weight of bread made from several grades of Minneapoli flour, from the strongest to the weakest, at 42¼ per cent. At that rate a barrel of 19 pounds would produce about 279 pounds of bread. Bakers in this city estimate tha a barrel of our flour makes about 270 pounds of bread.

THE COFFEE TRADE OF SAN FRANCISCO.

The imports of coffee at San Francisco are in excess of the local consumption. Some of the business houses of Chicago, Saint Louis, and other large cities import the higher grades of Central American coffee through the San Francisco agents of the producers. If the rate of freight on that article by rail from this city could be reduced, a much larger business would be developed. As the steamers from Panama and Central America do not proceed farther north than this port, it is the distributing point for the entire coast, including British Columbia.

PASSENGER MOVEMENTS AT THE PORT OF SAN FRANCISCO DURING THE YEARS 1881 AND 1882.

Number of through passengers carried by the Central Pacific Railroad Company during the years 1881 *and* 1882, *as stated by Mr. T. H. Goodman, general passenger and ticket agent.*

	1881.	1882.
Eastward	30,891	37,113
Westward	47,107	58,113
Total	77,998	95,226

Statement of the passenger movement of this port by sea during the years 1881 *and* 1882.

From or to—	1881.		1882.	
	Arrived.	Departed.	Arrived.	Departed.
Panama, N. G	2,099	1,485	1,983	1,355
Victoria	2,357	1,450	1,941	2,165
China and Japan	19,561	9,589	27,730	9,063
Australia, Honolulu, New Zealand, &c	3,087	2,022	3,074	3,907
Mexico	561	265	511	266
Society Islands	76	33	102	53
Europe, direct	27	9	20	4
Other countries	37	1	44	12
Totals	27,805	14,854	35,355	16,825

Average amounts to be added for insurance and for bagging to the average freight charges from San Francisco to Liverpool during each of the years 1880, 1881, *and* 1882, *as stated by Mr. Morris Marcus.*

[Per 100 pounds.]

Year.	Average freight, as stated by Mr. Marcus.	Amount to be added for insurance and bagging.		Total cost for freight, insurance, and bagging.
		For insurance.*	For bagging.	
	Cents.	*Cents.*	*Cents.*	*Cents.*
1880	$64\frac{87}{100}$	$2\frac{13}{100}$	$7\frac{72}{100}$	$74\frac{72}{100}$
1881	$77\frac{1}{100}$	$2\frac{41}{100}$	$6\frac{47}{100}$	$85\frac{89}{100}$
1882	$56\frac{44}{100}$	$2\frac{06}{100}$	$6\frac{71}{100}$	$65\frac{21}{100}$

*Insurance calculated on basis of 2 per cent. (rate for iron vessels), with the following discounts: For 1880, 10 per cent. and 5 per cent.; for 1881, 10 per cent., 5 per cent., and 5 per cent.; for 1882, 10 per cent., 5 per cent., and 10 per cent. The insurance on cargoes of wheat in wooden vessels would be at the rate of 2½ per cent., with the same discounts.

APPENDIX No. 61.

RAIL RATES FOR THE TRANSPORTATION OF WHEAT IN CALIFORNIA—THE VALUE AND EXPENSES OF THE GRAIN FLEET—THE MANUFACTURING INDUSTRIES OF CALIFORNIA.

BY MORRIS MARCUS, Esq., *Secretary of the Chamber of Commerce of San Francisco.*

THE CHAMBER OF COMMERCE OF SAN FRANCISCO,
San Francisco, September 7, 1883.

DEAR SIR: Referring to your letter of the 27th ultimo, concerning local freight charges on grain, I would say that the distance by rail from Marysville to San Francisco is 142 miles via Benicia, or 192 miles via Stockton and Niles, or 203 miles via Stockton and Port Costa. The rate from Marysville to San Francisco via Benicia is $2.90 per ton, which is equivalent to more than 2 cents per mile; via Stockton it is $3.30, or about 1⅔ cents per ton per mile. The Benicia route is the one generally used, being the shortest and cheapest, but the occasional overflow of the Sacramento River has at times carried away a portion of the road between Benicia and Sacramento, interrupting its traffic. At such times the railroad company has been put to extra expense in bringing grain from the Sacramento Valley to shipping points on the bay, by the long route, and on that account there is a difference of 40 cents per ton in tariff rates.

When rail and water lines come into direct competition with each other in the interior of this State the rates by water are generally about one-third lower than those by rail. In some cases the difference is greater, as at Stockton. The reports of the commissioners of transportation and of the board of railroad commissioners discuss this matter fully.

In reply to your question as to which route is preferred by the Central Pacific Railroad Company for through traffic, I have to submit the inclosed copy of a letter from the general traffic manager of that company, stating the basis upon which the Central and Southern Pacific Railroads prorate with connecting lines.

With reference to your letter of the 28th ultimo, I would state that the rate of $12 per ton of 2,000 pounds wheat, from San Francisco to Liverpool via New Orleans, was offered by the Southern Pacific Railroad Company in the beginning of August, 1883. During the present month the company has offered a rate of $11 per ton, and engaged 2,000 tons.

The short route has been disadvantageous for the past ten months on account of the heavy stocks of wheat in European markets, cargoes arrived, or nearly due, selling at lower rates than cargoes not due for four or five months. The shipment of wheat from California via Cape Horn lasts throughout the entire year, new wheat reaching this market in the latter part of July, usually, and the largest shipments being made in the autumn and winter months.

The inclosed documents may be of some assistance to you in regard to this and other matters under consideration.

I am, sir, very respectfully, yours,

MORRIS MARCUS,
Secretary.

Hon. JOSEPH NIMMO, JR.,
Chief of the Bureau of Statistics, Washington, D. C.

APPENDIX No. 62.

ACREAGE OF LAND UNDER WHEAT CULTURE, AND THE WHEAT PRODUCT IN CALIFORNIA DURING THE YEAR 1882.

The total acreage in wheat and the wheat product in California in 1882 amounted, as reported to the State board of equalization in 1883, to 3,076,659, of which 1,177,380 acres were situated in interior counties north of the intersection of the San Joaquin and Sacramento Rivers, 1,174,423 acres in interior counties south of that point, and 724,856 acres in counties on the western slope of the Coast Ranges.

Acreage and product of wheat in interior counties of California north of the intersection of the San Joaquin and Sacramento Rivers.

Counties.	Acres.	Product.	Counties.	Acres.	Product.
		Bushels.			*Bushels.*
Solano	75,070	1,393,135	Nevada	5,000	(*)
Sacramento	69,531	979,653	Sierra	150	2,450
Amador	2,550	50,800	Plumas	2,000	40,000
El Dorado	1,256	20,087	Placer	29,320	483,780
Napa	26,340	392,584	Tehama	175,200	1,752,000
Lake	8,421	144,959	Shasta	19,480	252,240
Colusa	400,000	5,000,000	Lassen	10,000	(*)
Butte	63,984	1,202,728	Modoc	38,965	701,987
Yolo	132,000	2,640,000	Yuba	27,360	410,400
Sutter	90,753	2,226,666		1,177,380	17,693,469

* No data.

Acreage and product of wheat in interior counties of California south of the intersection of the San Joaquin and Sacramento Rivers.

Counties.	Acres.	Product.	Counties.	Acres.	Product.
		Bushels.			*Bushels.*
Alameda	87,150	1,021,300	Merced	168,549	1,040,953
Contra Costa	116,413	2,793,780	Mariposa	457	4,987
San Joaquin	210,000	3,150,000	Fresno	21,596	103,216
Palo Veras	(*)	(*)	Tulare	91,478	262,119
Alpina	120	2,018	Inyo	1,020	21,900
Tuolumne	6,250	125,500	Kern	9,000	153,000
Mono	(*)	(*)	San Bernardino	2,985	26,865
Stanislaus	459,405	5,376,874		1,174,423	14,082,512

* No data.

Acreage in wheat in counties on the western slope of the Coast Ranges.

Counties.	Acres.	Counties.	Acres.
Siskiyou	9,500	Santa Clara	158,000
Del Norte	350	San Benito	35,000
Humboldt	5,500	Monterey	121,000
Trinity	900	San Luis Obispo	37,000
Mendocino	25,000	Santa Barbara	32,000
Sonoma	78,000	Ventura	22,000
Marin	3,600	Los Angeles	48,500
San Francisco	350	San Diego	29,000
San Mateo	24,000		644,200
Santa Cruz	14,500		

APPENDIX No. 63.

COMPARATIVE STATEMENT SHOWING AVERAGE MONTHLY FREIGHT RATES ON WHEAT, PER TON OF 2,240 POUNDS, BY SAILING VESSELS, FROM SAN FRANCISCO TO LIVERPOOL, FROM JULY, 1872, TO JUNE, 1884, INCLUSIVE.

[Prepared by Mr. Albert Montpellier, cashier and manager of the Grangers' Bank of California.]

Months.	1872–'73.			1873–'74.			1874–'75.			1875–'76.			1876–'77.			1877–'78.			1878–'79.			1879–'80.			1880–'81.			1881–'82.			1882–'83.			1883–'84.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
July	4	1	6	4	15	6	3	18	0	2	4	6	3	4	4½	2	3	9	2	11	3	2	6	3	2	17	4	3	13	0	2	13	9	2	11	0
August	3	12	6	3	17	6	3	12	6	2	5	6	2	17	6	2	6	3	2	11	12	2	9	3	2	18	6	3	17	6	2	14	0	2	12	6
September	3	18	6	3	2	6	3	5	6	2	10	0	3	2	6	2	0	6	2	3	6	2	7	6	3	4	6	4	2	6	2	5	0	2	7	6
October	4	6	6	3	6	6	2	15	6	2	11	6	3	0	0	1	18	9	2	3	9	3	5	10	3	8	6	4	2	6	2	1	6	2	2	3
November	4	5	0	3	2	6	2	15	0	2	13	6	2	17	6	2	1	0	2	5	7½	3	5	0	3	10	4	3	12	6	2	2	6	2	5	6
December	4	2	6	3	7	6	3	0	0	2	11	6	2	16	3	2	1	3	1	15	0	3	1	6	3	11	0	3	11	3	1	17	6	1	10	9
January	4	0	0	4	0	0	2	17	6	2	5	0	2	11	7	2	3	0	1	13	9	3	0	6	3	13	6	3	7	6	1	16	9	1	4	6
February	4	2	6	4	1	0	2	7	6	2	2	6	2	4	5	2	9	6	1	17	6	2	10	6	3	15	0	3	5	0	1	18	6	1	6	9
March	4	0	0	3	15	0	2	2	6	2	5	0	2	1	3	2	5	0	2	6	3	2	0	4	3	17	6	3	0	0	1	19	3	1	9	3
April	3	17	6	3	12	6	2	0	0	2	10	0	2	2	6	2	10	0	2	4	3	2	0	2	3	18	2	2	17	6	2	1	3	1	8	6
May	3	18	6	3	15	0	2	2	6	2	15	6	2	4	0	2	7	6	2	5	9	2	10	6	3	17	6	2	12	6	2	2	6	1	12	3
June	4	10	0	3	18	0	2	7	6	3	6	0	2	9	9	2	8	9	2	5	0	2	14	6	3	10	0	2	7	6	2	9	6	1	15	0
Average each year	4	1	3	3	14	5½	2	15	4	2	10	0½	2	12	7½	2	4	7½	2	3	7½	2	12	7½	3	10	1½	3	7	5½	2	3	5	1	17	1½

APPENDIX No. 64.

MILEAGE OF RAILROADS OF CALIFORNIA.

[From Poor's Manual of Railroads, 1884.]

Name of road.	Mileage.	Corporation by which owned or operated.
1. Amador Branch	27.20	Amador Branch R. R. Co.*
2. Bay and Coast	24.10	South Pacific Coast R. R. Co.
3. Berkeley Branch	3.84	Berkeley Branch R. R. Co.*
4. Black Diamond (coal)	6.00	Black Diamond Coal Mining Company.
5. Bodie (lumber)	36.00	
6. Bodie (lumber, 3-foot)	6.00	Bodie Railway and Lumber Company.
7. California Northern	26.50	California Northern R. R. Co.
8. California Pacific	113.44	California Pacific R. R. Co.*
9. California Southern	129.75	California Southern R. R. Co.
10. Carson and Colorado (3d division)	187.50	
11. Caspar Creek	3.25	Caspar Lumber Company.
12. Central Pacific	611.77	Central Pacific R. R. Co.*
13. California and Oregon	20.00	
14. Empire Coal	5.50	Empire Coal Mining Company.
15. Guallala (lumber)	7.00	Guallala Mill Company.
16. Los Angeles and Independence	16.83	Los Angeles and Independence R. R. Co. (Southern Pacific).*
17. Los Angeles and San Diego	27.82	Los Angeles and San Diego R. R. Co. (Southern Pacific).*
18. Mendocino	4.00	Mendocino R. R. Co.
19. Monterey	15.12	Southern Pacific R. R. Co.*
20. Nevada County	22.64	Nevada County R. R. Co.
21. Nevada and Oregon	3.00	
22. North Pacific Coast	76.25	North Pacific Coast R. R. Co.
23. Northern	153.63	Northern Railway Co.*
24. Noyo and Pudding Creek (lumber)	2.00	Private road.
25. Pacific Coast	63.80	
26. Pittsburg (coal)	5.33	Pittsburg R. R. Co.
27. Redwood (lumber)	4.25	Private road.
28. Sacramento and Placerville	47.41	Sacramento and Placerville R. R. Co.
29. Salmon Creek (lumber)	8.00	Private road.
30. San Francisco and North Pacific	92.50	San Francisco and North Pacific R. R. Co.
31. San Pablo and Tulare	46.52	San Pablo and Tulare R. R. Co.*
32. San Rafael and San Quentin	3.50	North Pacific Coast R. R. Co.
33. San Joaquin and Sierra Nevada	30.30	San Joaquin and Sierra Nevada R. R. Co.
34. Santa Cruz	21.20	Santa Cruz R. R. Co.†
35. Santa Cruz and Pelton	5.90	South Pacific Coast R. R. Co.
36. Sonoma Valley	15.00	San Francisco and North Pacific R. R. Co.
37. South Bay (and Land)	4.50	
38. Southern Pacific	956.66	Southern Pacific R. R. Co.*
39. South Pacific Coast	45.30	South Pacific Coast R. R. Co.
40. Stockton and Copperopolis	44.66	Stockton and Copperopolis R. R. Co.*
41. Vaca Valley and Clear Lake	29.00	Vaca Valley and Clear Lake R. R. Co.
42. Visalia	7.33	Visalia R. R. Co.
Total	2,880.60	

* Operated by the Central Pacific R. R. Co. † Operated by the Southern Pacific R. R. Co.

APPENDIX No. 65.

IMPORTS AND EXPORTS OF GOLD AND SILVER COIN AND BULLION INTO AND FROM THE PORT OF SAN FRANCISCO, CAL., DURING EACH YEAR ENDED JUNE 30, FROM 1856 TO 1884, INCLUSIVE.

Year ended June 30—	Imports.	Exports.	Year ended June 30—	Imports.	Exports.
	Dollars.	*Dollars.*		*Dollars.*	*Dollars.*
1856	820,844	7,355,159	1871	4,406,612	10,614,302
1857	3,160,528	11,841,405	1872	6,108,231	17,892,009
1858	2,474,531	12,643,537	1873	6,742,813	17,260,887
1859	3,499,145	11,906,901	1874	5,512,859	11,977,697
1860	2,210,905	5,427,926	1875	5,020,240	7,168,166
1861	1,291,484	4,794,311	1876	5,650,353	8,490,067
1862	2,591,509	6,502,533	1877	6,699,414	18,128,546
1863	2,756,689	3,529,755	1878	5,926,703	17,571,387
1864	4,216,325	42,122,326	1879	5,935,135	8,306,931
1865	4,492,270	23,356,763	1880	6,043,566	7,999,973
1866	2,542,409	19,127,066	1881	6,724,586	6,880,412
1867	Not stated.	13,154,182	1882	10,642,761	5,242,275
1868	3,818,650	12,688,750	1883	9,251,248	7,748,610
1869	2,971,297	18,469,604	1884	8,703,295	11,548,822
1870	5,851,554	21,984,543			

APPENDIX No. 66.

STATEMENT SHOWING THE VALUE OF THE MANUFACTURES, AND THE TOTAL AMOUNT PAID IN WAGES IN THE MANUFACTURES, OF CALIFORNIA, OREGON, AND WASHINGTON TERRITORY.

CALIFORNIA.

Years.	Amount paid in wages.	Value of product.
	Dollars.	*Dollars.*
1860	28,402,287	68,253,228
1870	13,136,722	66,594,556
1880	21,065,905	116,218,973

OREGON.

1860	635,256	2,976,761
1870	1,120,173	6,877,287
1880	1,667,046	10,981,222

WASHINGTON TERRITORY.

1860	453,601	1,406,921
1870	574,936	2,851,652
1880	532,226	3,256,124

APPENDIX No. 67.

NUMBER AND VALUE OF GRAIN BAGS CONSUMED IN CALIFORNIA EACH YEAR, FROM 1871 TO 1884, INCLUSIVE.

Years.	Number of bags used each year.	Average price per year in cents.	Total value per year.
			Dollars.
1871	5,400,000	12½	681,750
1872	12,600,000	16½	2,062,500
1873	10,328,000	14½	1,497,560
1874	15,050,000	13½	1,994,125
1875	13,500,000	10½	1,462,000
1876	19,623,000	11⅞	2,330,290
1877	12,376,200	10	1,237,620
1878	22,000,000	11½	2,475,000
1879	21,017,000	9⅞	2,075,428
1880	34,111,500	10½	3,536,068
1881	31,000,000	8½	2,672,750
1882	30,000,000	8	2,400,000
1883	30,000,000	7½	2,287,500
1884	33,000,000	7	2,310,000

APPENDIX No. 68.

THE FOREIGN COMMERCE OF CALIFORNIA FROM 1851 *TO* 1884.

Year ended June 30—	Imports.	Domestic and foreign exports.	Total.
	Dollars.	*Dollars.*	*Dollars.*
1851	*$13, 531	.....	13, 531
1852	*4. 648, 587	.....	4, 648, 587
1853	*101, 312	*555, 453	656, 765
1854	*8, 407, 701	*3, 423, 395	11, 831, 096
1855	*5, 951, 379	*8, 224, 066	14, 175, 445
1856	6, 477, 995	3, 362, 915	9, 840, 910
1857	5, 976, 886	2, 594, 496	8, 571, 382
1858	6, 515, 202	2, 395, 710	8, 910, 912
1859	7, 664, 413	4, 012, 287	11, 676, 700
1860	7, 369, 963	4, 868, 076	12, 238, 039
1861	7, 215, 022	7, 363, 116	14, 578, 138
1862	5, 598, 399	7, 134, 851	12, 733, 250
1863	7, 925, 720	8, 368, 535	16, 294, 255
1864	10, 849, 53	8, 262, 546	19, ..., 699
1865	15, 802, 226	9, 987, 516	25, 789, 742
1866	13, 926, 007	10, 986, 246	24, 012, 253
1867	*18, 064, 911	14, 302, 935	32, 367, 846
1868	15, 685, 337	14, 234, 480	29, 919, 817
1869	15, 117, 604	12, 935, 758	28, 053, 362
1870	15, 982, 549	13, 991, 781	29, 974, 330
1871	15, 978, 295	13, 033, 228	29, 011, 523
1872	27, 222, 270	10, 190, 074	37, 412, 344
1873	32, 680, 984	25, 007, 431	57, 688, 415
1874	26, 775 604	25, 090, 080	51, 865, 684
1875	24, 702, 492	24, 247, 787	48, 950, 279
1876	28, 478, 643	23, 391, 572	51, 870, 215
1877	29, 712, 487	29, 935, 636	59, 648, 123
1878	26, 702, 577	21, 895, 623	48, 598, 200
1879	29, 170, 504	31, 386, 793	60, 557, 297
1880	35, 329, 288	32, 423, 812	67, 753, 100
1881	38, 103, 898	35, 468, 890	73, 572, 788
1882	41, 680, 528	54, 007, 434	95, 687, 962
1883	46, 067, 789	45, 333, 891	91, 401, 680
1884	36, 216, 073	37, 528, 240	73, 744, 313

* Including specie.

APPENDIX No. 69.

QUANTITY OF SUGAR IMPORTED AT SAN FRANCISCO AND SHIPPE
BY THE CENTRAL PACIFIC RAILROAD.

Year ended June 30—	Free of duty from the Hawaiian Islands.	Dutiable from all other countries.	Total.	Year ended December 31—	Ship by Ce cific
	Pounds.	*Pounds.*	*Pounds.*		
1879	39,701,448	30,729,331	70,430,779	1879	
1880	59,708,695	8,452,195	68,160,890	1880	
1881	76,880,900	26,979,840	103,860,740	1881	
1882	104,283,601	2,441,582	106,725,183	1882	
1883	108,499,218	15,777,066	124,276,284	1883	
1884	125,048,089	24,728,334	149,777,323	*1884	

*Shipped east via Southern Pacific Railroad, 16,316,210 pounds.

APPENDIX No. 70.

STATEMENT SHOWING THE NUMBER AND VALUE OF CATTLE AND SHEEP ON FARMS IN THE STATES OF CALIFORNIA, OREGON, AND WASHINGTON TERRITORY, AT THE BELOW-STATED PERIODS, FROM FEBRUARY, 1871, TO JANUARY, 1885.

[From the annual reports of the Department of Agriculture.]

CALIFORNIA.

Years.	Cattle (a).		Sheep.	
	Number.	Value.	Number.	Value.
		Dollars.		*Dollars.*
February, 1871	676,800	21,850,848	3,636,000	9,417,000
December, 1880	1,473,300	35,340,543	7,493,864	12,739,569
January, 1882	636,713	16,203,322	6,352,344	10,481,368
January, 1883	789,280	23,551,508	5,907,680	11,933,514
January, 1884	830,208	26,153,829	6,203,064	11,785,822
January, 1885	847,338	27,623,882	5,892,911	11,137,602

OREGON.

February, 1871	224,400	4,224,780	419,200	796,480
December, 1880	324,527	5,384,073	1,176,433	1,717,592
January, 1882	390,678	6,321,498	2,333,162	3,733,059
January, 1883	577,491	13,386,792	2,403,157	5,166,788
January, 1884	601,216	16,400,252	2,571,378	4,654,194
January, 1885	620,505	16,846,219	2,519,950	4,057,120

WASHINGTON TERRITORY.

February, 1871	(b)17,254	(c)	44,063	(c)
December, 1880	(b)134,554	(c)	292,883	(c)
January, 1882	(c)	(c)	(c)	(c)
January, 1883	148,500	3,792,459	390,000	955,500
January, 1884	276,008	7,388,108	456,300	1,090,557
January, 1885	304,522	8,091,140	533,875	1,270,623

(a) Includes milch cows, oxen, and other cattle. (b) From the United States census. (c) No data.

APPENDIX No. 71.

A REVIEW OF THE COMMERCE OF THE CITY OF BALTIMORE, PRESE-ING THE LEADING COMMERCIAL AND MANUFACTURING INDUSTR THE RELATIONSHIP THE CITY BEARS, AS A DISTRIBUTIVE AND P- DUCTIVE MARKET, TO THE VARIOUS STATES AND TERRITORIES THE UNITED STATES, WITH A GENERAL REVIEW OF HER TRANSP- TATION INTERESTS.

By JOHN R. BLAND, *Baltimore, Md.*

PRELIMINARY REMARKS.

In looking backward, to trace the growth of commerce in the region extend from the Atlantic seaboard to the Western States, particularly of the valleys of Ohio, Missouri, and Mississippi, there are found to have been certain distinctive cl acteristics affecting changes sufficiently marked to be allotted to three distinct er

First. An era of overland transportation, 1750 to 1815.

Second. An era of steamboat and sail transportation, 1815 to 1841.

Third. An era of steamship navigation and railway transportation, 1841 to 1

(*a.*) The first era, that of overland transportation prior to 1815, when the gr West was but a prairie, States were Territories, and many important cities of to- had no existence. Baltimore, supported by her geographical position, maintaine controlling influence over the distributive commerce of the Eastern and Middle Sts to the Western and Southwestern States and Territories; the cities of New Yo Philadelphia, and Boston availed themselves of the convenience presented by Ba more in affording the shortest overland wagon route from the seaboard to the inter

(*b.*) The second era of transportation, from 1815 to 1841, was closely connec with the first; the old modes of overland carriage still prevailed. The interior c tributing trade centers, Cincinnati and St. Louis, were the most important; tl were reached at first circuitously, by sailing vessels to New Orleans, and thence c tribution was effected by means of the fleets peculiar to the great rivers, the Mis sippi, the Ohio, and the Missouri.

It was in these days that our sails whitened every sea, that our merchants dispatcl our products to the Brazils, the Indies, and China, contented to wait the greater p of a year for returns in such cargoes as now reach us via the Suez Canal and the cific Railroad. The supercargo was an important feature of the business; with modern systems of communication and the changes in modes of conducting busin his functions have long since been superseded.

During this period ship-building increased and flourished steadily, and the fa of "Baltimore clippers" was universal. In the war of 1812 these maintained superiority as privateers conceded to them in 1777 to 1783, and became distinguisl for blockade running; and it was by the adventurous spirit of those who control and commanded them that large fortunes were made.

A long line of merchant princes grew up, establishing renown for themselve business and unsullied reputation to bequeath to their posterity.

(*c.*) The third era—that between 1841 and 1883, when regular ocean steam navi tion had been introduced and the Baltimore and Ohio Railroad completed to the O River—the era of steamship navigation and railway transportation, was the m important. This is the period the character of which is to foster the developm of both productive and distributive commerce; the one in which commerce is th oughly aggressive, constantly expanding its area, increasing its volume, and assert its power through the new forces created by it. In the interchange of commodi both time and distance are eliminated in overcoming difficulties.

OCEAN STEAM NAVIGATION; GRADUAL DEVELOPMENT; NECESSITY OF CLOSER CONNECTION BETWEEN OCEAN AND LAND CARRIAGE, PARTICULARLY AS RELATING TO THE COMMERCE OF BALTIMORE.

It has been a source of regret to a large portion of the press and to many public men in this country that the flag should have retired from a roving life at sea to live at home at ease, to grace occasions when loyalty airs itself, public speakers need inspiration, or social gatherings decoration; but so far as the North Atlantic trade is concerned, in which it had most prominence, and for the past ten or twelve years we have little doubt but that it has also been a source of regret to the British ship-owner that the Union Jack should have supplanted ours.

The metaphor of a ship plowing the sea is not so unlike the truth as its sound would indicate; a plow has to lift the earth out of its way, and to throw it up on one side; a plow, to raise a furrow a foot broad and a foot high, would require at least one or two horses to do it, and, in like manner, it requires one or two horses' power of steam engine for every furrow a foot wide and a foot deep which a steamship has to plow across the ocean.

Not only is the quantity of work of plowing the sea as heavy as plowing clay land, but it is of the same sort.

Like the clay, the water has to be raised out of its groove and laid on one side: the propellers, therefore, and the horses' power which propel it, have actually to plow the sea; they lift the water out of the groove and lay it on the top of the surrounding water.

It used, with the old-fashioned plow, to take four horses to open a furrow of a square foot, and it took more than four horses to open each furrow of a square foot of water before the old-fashioned ship.

There came an improvement in plows; they were drawn out in front to a thin, fine edge, they were carefully smoothed, they were made wedges, but not straight wedges. The hollow curve just parted the earth, then raised it obliquely, and gently laid it on one side.

A like change has come over the plowshare of the sea; a fine sharp edge is introduced to push the water, a gentle hollow curve first insinuates itself between the particles, gently raises them, and finally removes them to one side.

The profits of the oldest of the steamship companies secured in the earlier stage of their existence have been considerably depleted, and, in some cases, altogether lost, during the competition and adverse circumstances of more modern times.

The Cunard and Inman companies have long since emerged from the privacy of private undertakings into the less responsible, and scarcely as respectable, "limited liability companies," and neither has improved by the change.

Since the transfer of the older companies to the new proprietors the dividends have been scanty. Under a guarantee from the venders of 6 per cent. dividend for the year succeeding the transfer, and that the sum of $500,000 should be carried to the reserve fund the following year, the shares were eagerly taken up in 1880, and even rose to 20 per cent. premium. They are now at 60 per cent. discount. In 1881 and 1882 but 3 per cent. and 4 per cent. dividends were respectively paid. In 1883 no dividend was forthcoming, and only $6,350 carried forward, while $1,250,000 capital has been raised upon the issue of debentures.

The stock of the National Steamship Company, one of the oldest in the trade, originally $50, is now quoted at $20.

The Union Steamship Company, that lately endeavored, unsuccessfully, to open a trade with Baltimore via Bermuda, finds its stock, originally $50, quoted now at 7.50.

These are but a few of the many suffering companies, and they are named to show that even in much-favored New York business they are far from profitable ventures, and that especially in less favored ports do they deserve the greatest consideration and co-operation from the railroad companies.

In a quarter of a century the mercantile marine has, like the Navy, been in a state of transition and torture: the Crimean war, our own difficulty of 1860 to 1865, and other minor influences left their impressions; next, the success of the Suez Canal, and the reconstruction necessary to meet its developments.

The changes from sail to steam, from paddle to screw, from wood to iron, from iron to steel, and, lastly, the adoption of size and speed, have all been sources of *distraction*.

The march of improvement, from time to time, has made the more recent types of vessel more efficient and economical in working, while the obsolete in type have not only been unprofitable, but have depreciated so much in value as to be a severe drag upon their owners.

A large number of such vessels in other trades have been altered to suit the changed condition of things, but it is questionable if the results, however extraordinary, have been attained at too great a cost. We submit in the following table a few evidences of the application of the modern appliances to comparatively young, though obsolete, types.

Vessels in which ordinary engines were superseded by compound.

[Five vessels, A, B, C D, and E.]

Vessels.	A.	B.	C.	D.	E.
Length between perpendiculars	200.3	311.4	345	346	348.1
Breadth	26.4	40.2	42	39.2	40.4
Depth	16.2	32.7	32.6	35.3	33.3
Gross tonnage	611	2,833	*3,126 †3,429	2,956	2,99

* Before. † After.

	A.		B.		C.	
	Old.	New.	Old.	New.	Old.	New
Total distance run, knots	31,990	58,040	284,279	125,562	76,658	75,
Total hours under way	4,478	9,300	30,229	12,213	7,868	71,
Average speed per hour, knots	7.14	6.24	9.40	10.28	9.74	10.
Coal consumed, tons	2,007	2,007	70,368	15,481	15,141	11,
Coal consumed per day, tons	10.75	5.18	54.66	30.42	46.18	37
Average mean draught	14.1	14.1	19.3	20	19.1½	20
Area ⊗	342	342	644.3	674	677.6	745
Displacement in tons	1,320	1,320	3,727	3,925	4,444	4,9
Coefficient of merit, De Russett, $\frac{D^{\frac{2}{3}} \times V\ 2.3}{CON}$	950.6	1,448	608.8	1,377.7	1,099.8	1,729.
Improvement, per cent. in compounding	.....	52.3	.....	126.2	.....	57.

	D.		E.	
	Old.	New.	Old.	New.
Total distance run, knots	49,028	56,285	25,335	25,202
Total hours under way	4,595	5,115	2,250	2,201
Average speed per hour, knots	10.67	11	11.26	11.45
Coal consumed, tons	13,875	9,083	5,072	3,485
Coal consumed per day, tons	74	42	54	37.5
Average mean draught	22.8	24.2	18.11	19.7
Area ⊗	787.56	850.7	612	645
Displacement in tons	4,600	5,068	3,990	4,200
Coefficient of merit, De Russett, $\frac{D^{\frac{2}{3}} \times V\ 2.3}{CON}$	865.7	1,745.2	1,221.2	1,891.1
Improvement, per cent. in compounding	.....	101.5	.....	54.8

A steamer with which we are acquainted made fifty round trips in her trade with first-class jet-condensing engines, consuming 3,000 tons of coal each trip.

The first round trip after she had received compound surface-condensing engines, she made at same speed, with 1,445 tons of coal, developing the power with 2 pounds per horse-power per hour, upon which she expended 4 pounds previously, with non-expansive and jet condensers.

As a type of a comparatively modern successful Atlantic passenger steamer, we are enabled to supply the accumulated working of the White Star steamer Britannic for eleven voyages. This vessel has made the run across in seven days ten hours and fifty-three minutes, and is, therefore, still one of the fastest vessels in the trade. Her original cost may be taken to have been in the neighborhood of £200,000 or $1,000,000.

Work performed by steamship Britannic in eleven voyages during 1876 and 1877:

Total distance run	knots..	64,230
Total hours under way		4,269
Total coals consumed	tons..	18,214
Average speed	knots..	15.045
Average daily consumption of coals	tons..	101,932
Average mean draught	inches..	23.7½
Area midship section, at 23 feet 7 inches	feet..	926

Displacement	tons	8,500
Diameter of propeller	feet	23¼
Pitch of propeller	do	31¼
Surface of propeller	do	128
Average number of revolutions		52.3
Average pressure	pounds	65
Average indicated horse-power		4,900
Average consumption of coals	pounds	1.94
Average consumption of coals per knot	cwt	5
Average consumption of coals per hour	tons	4.25
Average per furnace per hour		2.67

The Cunard Company commenced their memorable career with wooden-paddle steamers that burned 4.7 pounds of coal per indicated horse-power per hour, that carried 225 tons of cargo, 90 cabin passengers, and attained a speed of but 8.7 knots per hour.

A little before the steamship Britannic's birth they had, in 1874, after a gradual advance through twenty steamers, produced the Scythia and Bothnia, carrying 3,000 tons of cargo, 340 cabin passengers, and attaining a speed of 13 knots, upon a consumption of 2.2 pounds of coal per horse-power per hour.

The Inman Steamship Company in 1850 at once inaugurated, in its birth, a new condition of affairs by adopting iron screw-steamers successfully, their steamship City of Glasgow, 1,600 tons, 350 horse-power, sailing for Philadelphia in 1850, being the first vessel of the material and method of propulsion to cross the Atlantic.

The Cunard Company were five years considering the iron system before adopting it in the Persia in 1855, and the Scotia in 1862, and it was the latter year, with their steamship China, in which the screw was approved by them and has since been universally adopted.

The Inman Company was always foremost in applying new principles and attaining prominent results. It commenced its career to Philadelphia, not wishing to oppose the heavily subsidized Cunard Company in the New York trade, but in 1856, upon resuming sailings, after the close of the Crimean war had released their vessels from the transport service, their steamship Kangaroo was frozen up in the Delaware River, homeward bound, with all her passengers on board, for five weeks, and after such an experience there was nothing for it but to adopt New York permanently as the American terminus.

The company was the first to introduce iron in ocean navigation; the first to adopt the propeller as a means of propulsion; the first to carry emigrants in steamships; the first to call at Queenstown for mails, &c., and the first to develop remarkably fast passages. In August, 1869, the City of Paris made the run from Queenstown to Halifax in six days nineteen hours; in December of the same year, the City of Brussels made the trip from New York to Queenstown in seven days twenty hours thirty-three minutes, which was never made before, and not repeated until 1875, when their own steamship the City of Berlin made the run out to New York in seven days eighteen hours two minutes, and home in seven days fifteen hours fifty-eight minutes.

More modern developments have displayed better results, as regards speed, but the *day* gained has been annihilated at an enormous price—double size, double first cost of vessel, double crew, treble consumption of coals, and enormous reduction in carrying power, from the fact that it is difficult to build the large types of vessels suitable to the service, rigid enough, even with the great percentage of their displacement devoted to structural weight.

The steamship Oregon, the most powerful vessel afloat, has just made the passage out to New York in six days ten hours, the fastest on record; she has developed more than 12,000 indicated or actual horse-power.

The America, nearly completed for the National Steamship Company, Liverpool and New York service, it is thought will be next to the Oregon; her indicated horse-power, it is intended, shall be at least 10,500.

The improvements in modern construction have been, therefore, about as follows:

1. Increased speed.
2. Increased coal endurance.
3. Increased pumping force.
4. Greater structural strength.
5. Better water-tight subdivision.
6. Greater beam.
7. Double bottoms.
8. Steam-steering gear.
9. Hydraulic winches and discharging gear.

The New Zealand Shipping Company's (extra) steamer Tongasino has made the voyage from Lyttleton, New Zealand, via Cape Horn, in thirty-eight days three hours, an average of 12.8 knots in all weather (308 miles per diem), out and home; steaming time seventy-eight days twelve hours thirty-two minutes for 24,165 miles.

As to the first (speed), in addition to the Atlantic vessels now well known for their speed, we may mention that, in other trades, especially to India and the East, wonderful results have been disclosed.

The steamship Stirling Castle (extra), 4,300 tons register, 8,508.8½ horse-power, has made the run from Hankow, China, to London, including 800 miles of river navigation, with over 5,300 tons of the new teas, in the remarkably short time of thirty-one days ten and one-half hours.

The Orient has run from London to Port Adelaide, 10,978, miles in thirty-six days sixteen hours.

The steel twin steamship Notting Hill has carried 6,700 tons of dead weight at a speed of 12½ knots.

These are but a few of hosts of recent successes.

The Austral has steamed 16.75 knots; the Massilia, of the Peninsular and Oriental Company, 17.14 knots.

The ironclad Rinchuello, lately built for the Brazilian Government, is said to be the most perfect vessel of modern times in dynamic efficiency. Her engines have indicated 4,537 horse-power for three (3) consecutive hours, during which her consumption of coals was but 1.34 pounds per horse-power per hour, with which she made 15 knots; pressed further she attained 16.238 knots, with 6,900 horse-power—the highest speed, by nearly a knot, ever attained by an ironclad.

These examples show to how large an extent coal consumption has been reduced in modern times, and, therefore, large endurance obtained.

There are now many vessels of moderate size capable of carrying coal to enable them to steam round the world at 10-knot speed—10 in the Cape of Good Hope trade alone.

The Fulda, of the North German Lloyd's, making wonderful passages, consumes, is said, but 1.6 pounds per horse-power per hour, and in Messrs. Napier's treble-expansion engines the consumption is reduced to 1.3 pounds.

We cannot give a more convincing proof of structural strength than by referring to the experience of the Arizona in running, bow on, into an iceberg; her tonnage 5,147; stem 9 by 5½ inches; plates ⅞ and 1⅛ inch, and at bow ⅞; two iron decks throughout, besides divisional bulkheads and collision bulkhead, 7/16, 25 feet from bow. This ship, steaming 13 knots, a velocity of 1,320 feet per minute, was suddenly brought to zero by work dissipated in bending, crumbling, and breaking stem, frames and plates for a length of 26 feet and a depth of 14 feet below water line. The collision bulkhead saved her. There are now over 300 steamships afloat which embody the immense advantage of being able to dispense with the buoyancy of any two compartments and still retain sufficient floating power.

There were built in the United Kingdom during the past three years 3,000,000 tons of shipping, chiefly steam; last year 658 iron steamers, 103 steel steamers, and 87 sailing vessels, of an aggregate tonnage of 1,200,116, were completed, as against 1,029,511 in 1882.

There were still on the ways unfinished on the 1st of January, 729,446 tons.

The outturn from the Clyde alone for 1883 was estimated to have cost £10,000,000, to have employed 52,000 men and boys, and to have distributed £5,000,000 to £6,000,000 in wages.

Messrs. John Elder & Co. alone turned out 13 steamers of the highest known class, of 40,115 tons, 56,995 horse-power, averaging over 3,000 tons each, such as the Oregon, the Stirling Castle, Austral, &c.

Messrs. Palmer, of Yarrow, delivered 36 steamers, 61,113 tons, but more of the "rover" class, an average of about 1,700 tons. The lost and dismantled tonnage was returned as 393,941 tons.

The proximity of coal and iron, the peculiar, dogged, plodding perseverance of these Britishers enables them to perform such feats.

Their output of coal in a year, by 495,000 miners—in 1881, 154,184,300 tons; 1882, 156,499,977 tons; 1883, 163,737,327 tons, would, according to Mr. Bessemer, have built 55 such pyramids as that of Ghizeh, which is 499 feet high, or more than one every week, or, if formed into cylindrical columns, 50 feet in diameter, 500 feet in height, and these placed in a row, their own breadth apart, would make a colonnade 85 miles and 750 yards long; the product of each working day being sufficient to make 14 of such columns, which would have a collective height of 7,000 feet, or a wall 200 miles long, 100 feet high, 41 feet 11 inches thick, exceeding the wall of China by sufficient to add another 346 miles to its length.

Upon the east coast, say of England, if one stands upon the deck of a steamer bound north or south he can count upon passing another steamer every twenty minutes throughout the day and night, and if he were to secure the passing within sight of the vessels bound back and forwards across the Atlantic, his experience would probably be astonishing.

We have dwelt long upon the subject of steam shipping because we scarcely think that there is a very prevalent knowledge of the adequate means by which England,

our best customer, is enabled to communicate with her colonies, however distant, and because we think we have been in the habit of treating too lightly the development of her leading dependencies and their capabilities of slipping into our shoes.

It will not suit such a country as England to be either starved, as Paris was, during a foreign war, nor to be trifled with in the furnishing of her supplies by the machinations of speculators.

Let us examine her requirements beyond her own production, which may be fairly taken to be the following:

Wheat	£33,690,105
Flour, corn, oats, &c	30,000,000
Provisions, meats, &c	35,934,221
Live stock	9,214,217
Sugar and dried fruits	27,000,000
Tea, coffee, &c	10,000,000
Wine	7,000,000
	152,838,543

A pretty long bill.

It is only in the first four items that we in America have any concern, and perhaps in the first two that our interests may be seriously assailed.

Hitherto four-fifths of her requirements have been supplied about as follows:

From the United States:		
Wheat:		
Atlantic ports	£13,759,939	
Pacific ports	6,323,029	
Corn	7,420,292	
Flour	5,968,746	
		£33,472,006
From Russia:		
Wheat	2,168,462	
Oats	1,975,836	
		4,144,298
From British India, wheat		3,844,822
From Australia, wheat		2,108,636
From Canada, wheat		3,021,677
From Sweden, oats		1,241,621
From Roumania, maize, millet, &c		1,981,942
Grand total		49,815,002

The last good home-crop of wheat she had was in 1874, the last big crop in 1868. The acreage under wheat was in 1882-'83 the smallest on record, and the crop the smallest grown within living memory, and yet little call has been made upon us as a consequence.

A million acres or one-fourth of the original wheat lands have been thrown out of wheat cultivation within a very recent period, and in Ireland 1,200,000 acres of root crops.

Under these circumstances it has been the policy of the United Kingdom in late years to encourage the efforts of her dependencies; and of these India has made extraordinary progress in her yield of grain and cotton. In 1879, 20,000,000 acres were under wheat and produced (26,000,000 quarters) 208,000,000 bushels, yet in the central provinces a new wheat field of more than 17,000,000 acres may be found, and in the Punjaub are 9,000,000 acres available for, but not now devoted to, wheat. In other parts are also large tracts available.

In fact the wheat area of India is three times as great as that of Great Britain, and all that is required by the mother country may easily be grown there. The large native population, being 135 to the square mile, can speedily bring this into cultivation, and it must not be considered that the progress will be slow, as with us. There are tracts of ten, twenty, thirty, sixty, and in one case one hundred and sixty thousand square miles, containing nearly 20,000,000 of people, without a single railway through them in the most fertile parts. The limited railroad service is the only present difficulty. There were but 10,144 miles open on the 31st December, 1882. Of this distance, only 150 (Nagpur to Chattigne) can be said really to enter the great wheat lands of the central provinces. The line from Gwalore to Bhopal would bring down 1,000,000 quarters (8,000,000 pounds) annually. In 1882-'83 373 miles of new road were opened.

The chairman of the directors (president) of the Great Indian Peninsular Railroad admitted in June last that his line was choked with grain. In fact, the Bombay Chamber of Commerce broadly asserts that India is capable of supplying not only the wants of the United Kingdom, but of producing an unlimited supply.

Let us see what the best authorities have to say upon the subject of its flour-producing qualities:

Synopsis and comparison of results obtained from Indian and other wheats by two systems of milling.

[By McDougall Bros., Wheatsheaf Mills, London, Dec'r (by order of the secretary of state for India), 1882. First line, millstones; second line, rollers.]

Wheat.	London value, 496 pounds net.	Weight per bushel.	Weight of 100 separate grains.	Quantity used.	Impurities removed.	Water absorbed to render mellow.	Yield.				Evaporation and loss.	Gluten by wet.
							Flour.	Middlings.	Pollard.	Bran.		
	s. d.	*Lbs.*		*Lbs.*	*P. ct.*	*P. c.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*		
1. Indian, fine, soft, white.	49 0	64	55.4	5,000	1.52	2.	77.46	.82	8.8	12.	1.40	6.4
							74.10	11.	8.7	4.	2.68	6.8
2. Indian, superior, soft, red.	45 0	62½	51.8	5,000	.72	3.6	78.40	1.68	9.8	9.4	3.6	8.3
							75.4	7.7	13.5	5.3	.96	10.5
3. Indian, average, hard, white.	44 0	60	68.3	5,000	3.7	8.4	80.52	.78	10.	8.3	5.1	11.7
							72.3	10.3	14.3	3.1	3.6	12.6
4. Indian, average, hard, red.	43 0	61½	77.7	5,000	1 2	7.6	79.88	.78	13.20	8.5	4.04	15.4
							74.2	10.3	13.8	3.	5.1	13.1
5. English	49 0	60½	57.4 / 57.7	5,000	1.5	Nil	65.2	1.1	9.7	17.7	4.8	10.6
							70.3	7.6	7.2	9.2	4.2	11.4
6. Australian	50 6	62½	80.5	5,000	1.	Nil	75.8	1.1	7.4	14.4	.3	11.6
							75.1	8.	9.3	5.5	1.1	12.2
7. New Zealand	48 0	62½	67.6	5,000	.3	Nil	76.1	.96	8.8	11.5	2.34	10.2
							76.	7.8	6.6	5.6	3.6	9.
8. Californian	48 0	59½	47.7	5,000	1.7	Nil	71.	.72	9.2	15.2	1.96	10.5
							70.	14.5	6.3	3.9	3.5	8.7
9. American winter	49 6	61½	49.6	5,000	.5	Nil	73.8	.38	7.9	16.4	1.2	11.
							71.5	10.3	11.2	3.1	3.4	11.7
10. American spring	48 0	61	35.5	5,000	.9	Nil	72.2	.24	7.2	14.7	4.76	15.3
							69.5	12.1	10.4	3.8	3.3	14.6
11. Russian Saponka	52 0	60½	37.3	5,000	.9	Nil	73.	1.2	11.6	12.6	.7	22.1
							71.	12.5	11.7	3.3	.2	22.3
12. Russian, hard, Tagan Rog.	49 0	61½	54.7	5,000	.8	2.4	76.	1.2	12.7	8.1	3.4	17.6
							72.	9.6	12.1	5.	2.9	15.6
13. Egyptian Buhi	47 0	58	50.1	5,000	2.7	3.1	72.9	1.	11.	10.	5.5	4.4
							72.6	10.4	8.5	2.5	5.4	7.9
14. Egyptian Saidi	43 6	57½	61.4	5,000	12.1	2.7	66.9	.76	11.4	7.5	4.04	7.5
							67.8	7.2	6.5	4.9	4.2	6.6

The capability of growing large quantities and at low prices may readily be conceived when it is known that the exceedingly trifling sum of 10 to 15 cents per day will suffice for the support of a family; rice is the staple food of the peasant, and upon this he subsists with perfect satisfaction.

In the central provinces, at Bebaspor for instance, wheat is grown and sold for (6*s.* to 7*s.* per 480 pounds) 19 to 22 cents per bushel of 60 pounds.

The railroad freight is practically the same as with us. By the East India Railroad Company, from Delhi to Calcutta, a distance of 954 miles, *i. e.*, about the same distance as from Chicago to New York, taking the rupee at (1*s.* 8*d.*) say, 41 cents, the ton (of 27.22 maunds) or 2,240 pounds of wheat, is carried per mile at the following rates: Under 100 miles, .9450 of a penny; 101 to 450 miles, .4725 of a penny; above 450, .3544 of a penny.

The average rate from Delhi to Calcutta is .3423 of a penny per mile. On our lines, the whole distance between Chicago and New York, taken at the same mileage as between Delhi and Calcutta, is $4 (say 16*s.* 8*d.*), but the American ton is 2,000 pounds only while the Indian ton is 2,240 pounds, *i. e.*, about one-eighth more than the American.

Making allowance for this difference in the weight of a ton, this would give the charge for the carriage of a ton of wheat from Delhi to Calcutta £1, as compared with 16*s.* 8*d.* on the American line at the 20-cent rate. At 30 cents, the charge on the Canadian and American lines would average 25*s.* per ton as compared with 2*d.* on the India line. It would appear, therefore, that the rate which has been fixed on the East India Railroad is practically, equivalent to 25 cents per 100 pounds in the United States.

The ocean freight varies considerably, about £1 1*s.* to £1 12*s.* 6*d.* per ton or 6*s.* 6*d.* to 7*s.* per quarter, from Calcutta, Kurrachee, or Bombay to Liverpool; this is about

half the rate from San Francisco to Liverpool, and 10 to 15 per cent. above the average rates from the Atlantic ports to the United Kingdom.

There is looming, in the not very remote future, the prospect of a free Suez Canal; already England owns one-half the stock, a large portion of the bonds, and controls 83 per cent. of the traffic. Such a consummation would reduce ocean freights 2s. per ton, and promote other influences still more favorable to the grain traffic with India.

At present, the great drawback is the limited sphere of the railroads, but this is being provided for. A select committee of the House of Commons is now considering the question with a view to pushing forward the construction of 2,000 miles of rails, and a similar committee is sitting at Calcutta.

It will be remembered that the effect of these proceedings will be experienced here quickly. Unlike our country, India is already populated, and compares with other nations in this respect as follows: Population, 212,671,621 (it is now 250,000,000), or per square mile, 135; Germany, 45,000,000, or per square mile, 213; Russia, 84,000,000, or per square mile, 40; England, 35,000,000, or per square mile, 445.

The cost of the railroads already constructed has been £143,000,000 sterling, or $77,500 per mile; the running expenses £7,580,549, and the profits, £7,650,702, or 5 37 per cent.

A broad-gauge road has recently been constructed at a cost of $30,000 per mile and a narrow gauge at $20,000 per mile.

Notwithstanding all these difficulties, the following table will exhibit the enormous growth in the export of wheat, and the general character of its distribution, showing how quickly its quality has been approved of:

Exports from India of wheat.

To—	1877–'78.	1878–'79.	1879–'80.	1880–'81.	1881–'82.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*
Great Britain	10,698,518	1,597,273	3,037,022	5,964,168	17,507,907
Austria	1,663	.....	.....	6,348	53,052
Belgium	14,930	.....	56,599	422,158	4,900,423
France	217,792	20,556	138,439	2,513,393	9,908,403
Holland	.....	.....	.....	681,995	1,329,795
Italy	45,035	.....	47,744	254,848	671,727
Malta	78,351	.....	.....	115,539	201,006
Egypt	196,403	.....	.....	.....	1,715,534
Reunion	48,733	92,684	75,562	67,583	72,824
Mauritius	289,124	82,867	57,280	147,073	116,996
Aden	48,877	40,199	55,147	89,514	65,609
Arabia	13,328	2,395	123,219	198,362	181,899
Ceylon	50,385	31,843	21,033	24,625	109,485
Turkey in Asia	.....	.....	381,119	204,114	.....
Persia	17	125	52,982	145,563	605
Straits Settlements	54,146	38,925	36,387	38,597	25,009
Other countries	77,644	43,346	15,827	21,746	219,217
Total	11,834,946	1,950,123	4,098,360	13,896,166	37,078,570

We also present, as follows, a statement of the progress the country is making in her general advance toward prosperity and modern civilization:

Progress of India since 1873.

	1873.	1878.	1881.	1882.
Miles of railroad opened	5,695	8,212	9,892	10,144
Passengers carried	22,000,000	38,000,000	52,000,000	58,000,000
Tons moved	4,000,000	8,000,000	13,000,000	14,800,000
Gross receipts	£6,000,000	£10,000,000	£13,700,000	£15,300,000
Imports	£38,000,000	£56,000,000	£59,000,000	£58,000,000
Exports	£56,000,000	£67,000,000	£76,000,000	£83,000,000
Revenue	£56,000,000	£61,000,000	£69,000,000	£71,000,000
Interest of debt ..... per cent.	5.5	5	4	4.5

From Australia we have not so much cause for apprehension, although the production is growing, and the area available almost unlimited. There are about 7,000,000 acres under cultivation, about 3,500,000, including New Zealand, under wheat, producing about 39,000,000 bushels. The exports have been gradually increasing, and have

been as high as 15,577,960 bushels in 1880; in 1881, (?); in 1882, (?); in 1883, (?). The cost of labor, however, and the high freight, owing to her remote position, must place her about on a level with California.

But nearer home we have a growing and determined opponent, a tract of land capable of raising 125,000,000 quarters of wheat (1,000,000,000 bushels), round the Red River and its affluents—a soil highly productive, yielding at present 23 to 35 bushels to the acre, as compared with 17 bushels in Illinois, down to 10 bushels in Kansas and Iowa.

Through this vast country, now becoming rapidly settled, the Canadian Pacific Railroad is being rapidly projected, to be completed, from sea to sea, in 1886.

But there are other means under consideration that will probably act in a much more direct and peremptory manner towards stimulating this country.

It is proposed to gain access to this region via Hudson's Bay to Churchill Harbor, and thence by railroad 350 miles to Lake Winnipeg, so that the distance from Liverpool to the edge of the wheat-producing area is 1,500 miles shorter than via Quebec.

The distances compare as follows:

	Miles.
Churchill Harbor to Liverpool	2,926
Montreal to Liverpool	2,990
New York to Liverpool	3,040

Already there is water communication for 2,384 miles, from the mouth of the Saint Lawrence to Duluth, the great emporium for grain on Lake Superior; and lake and water communication as far as the Saskatchewan, with the exception of a gap between Lake Superior and Sturgeon Falls on Lake Nepissing.

The Saint Lawrence canals and the Welland are being enlarged, at a cost of $50,000,000, to an extent sufficient to permit the passage of steamers of 2,000 tons burden, thus opening this lake district to direct ocean route; but there are other sources at work to bring into closer connection our neighbor with her august parentage.

In order to secure the establishment of ocean termini within the Dominion, in connection with the Canadian Pacific Railroad, the Government offer a subsidy of $960,000 for a railroad between Montreal and Quebec, together with $1,000,000 for a line between New Glasgow and the Straits of Canso, in Nova Scotia, besides $3,500,000 in fifteen annual payments of $231,000 each, as a subsidy, in guarantee of the interest on the bonds of the company agreeing to construct a short line of railroad connecting Montreal; Saint John, New Brunswick; Halifax, and Louisburg, in Cape Breton Island.

At the sitting of the Dominion House of Commons, on the 7th of April, 1884, the minister of railways stated that the Canadian and Pacific Railway Company was negotiating for the acquisition, from the Grand Trunk Company, of the north shore line between Montreal and Quebec. The minister added that both the companies concerned had given their consent to the transfer.

Looking at the present position of Baltimore, we see every necessity for the display of energy in improving our position—if it be not, indeed, in the attempt to hold our own. A thoroughly organized system of ocean transport, of an economical and most efficient description, is essential to the satisfactory development of our resources and the disposal of the productions of the country tributary to the port and its railroads, and it is most desirable that the intimacy and interest of the two modes of carriage should be as agreeable as that existing between two railroads in friendly intercourse and mutual reliance.

Although the necessity of so close a connection is not as important in a port so well and so regularly supplied with tonnage as New York, yet there the advantages are so well understood that each railroad has had a special relationship with some one or more of the steamship companies, although, of course, not to the exclusion of business with the others.

Of late this alliance has been dissolving, for the reason that the railroads are pushing business to such an extent that their competition overflows upon the ocean carriers.

The Cunard Company's service to New York, and the Inman following it, and their successors, have been the causes that have led to our scanty list of imports.

It was not an uncommon thing before the war for a dry goods house to be the consignee of 1,000 cases of goods in a sailing vessel to Baltimore; in the course of a year from all sources, we do not now receive that quantity.

There is no reason why we should not—at least, there is no fair and above-board reason—recover some of our lost business.

It is the import trade from which steamers derive substantial profit; the freight valuable and usually pays treble the outward rate upon grain and cotton; the latter are heavy and bulky, respectively, and, being of comparatively small value with bale and case goods, pay but a wretched consideration.

New York controls the great bulk of the general business, because she carries inward the country's foreign purchases, and can afford to carry out its domestic products at lower rates than we can. Grain, cotton, &c., are therefore higher than

than they are with us, and the railroads of Baltimore are bolstering up the system by holding up our railroad rates to theirs, to enable their transportation lines to canvass successfully for what is our natural right, and Western shippers like it because the port gives them better sale for their wares.

We seem satisfied to allow things to take their course; we do not even endeavor to enlarge the assortment of our receipts; we seem to rest satisfied with grain; for the cotton we receive—although an increase in quantity is announced annually—is obtained upon wretched terms, the ocean steamers here competing for it in Savannah and Norfolk chiefly with the steamers loading there direct, and from the low rate they are enabled to obtain, as a consequence of the roundabout route, they have to pay, generally, the greater portion thereof to coasting steamers for bringing it to them. There is only this or the alternative of going home half empty before them. The remedy we propose for these shortcomings is, first, the promotion of some scheme by which the ports of Boston, New York, and Norfolk, shall not enjoy more favorable railroad facilities than ours.

It is more important that we should have cotton than anything else, and if we get this at fair rates, we shall be enabled to ship grain at much lower figures, relatively, than has been our average.

It is to be hoped that the steps taken looking to an all-rail line to the South will be developed fully, so that that section may be able to ship cotton to us, direct, without transfer.

There is no more important question, at present, before the people of this city. We dare suggest that the Baltimore and Ohio, the Northern Central, and the Western Maryland railroads endeavor to encourage the through shipments of provisions, cheese, butter, oil cake, and other commodities, and that they shall further endeavor to encourage, to a moderate extent, pecuniarily if necessary, the increase of regular lines of steamers. We do not mean such so-called brokers' line, upon which so much printer's ink has been expended, and for which phantom concerns such generally unsuitable vessels have been induced to commence only to relinquish after a solitary trial. These do more harm than good. Special trades require special vessels and special experience on both sides to handle them, particularly with such a port as ours.

There is no difficulty in obtaining such connections, but they will not come of their own accord; there must be some reciprocal consideration; two or three well considered, economically worked, regular lines, in addition to those we have, will do us more good than a host of irregular outsiders; they can carry at much lower rates, and *they have paid here*, and we trust, although not without some misgivings, entirely apart from local considerations, they *they will pay again*. It is not exclusively a steamship matter, it is a railroad affair in a greater degree; any course that tends to reduce outward ocean freights must largely benefit railroads.

Without any intention of encroaching upon controversial questions, it is necessary in treating transportation subjects, to discuss some of the influences which affect their stability and capabilities to serve the cities and ports that are their implied and avowed termini.

A country that determines, without reference to the rest of the world, to supply its own unaided resources, assumes a role beset with subtle difficulties. One of the most serious is the self imposition of a double ocean freight upon all articles it seeks to dispose of to foreign consumers; for the vessels in which they are transported abroad must return empty to its shores.

This inevitable recurrence weighs most heavily upon agricultural products from their comparative inconsiderable pecuniary value, the earth yielding of her abundance without attaching the condition of labor in anything like the equivalent of the gift, and as she is bounteous to all nations alike in providing the necessaries of existence.

In the development of economic purpose, the task of producing is conceded to the country that can perform the office at the lowest cost, and in the order of things it must relinquish this concession so soon as it ceases to fulfill the conditions; the alternative is irresistible, and like the autumnal passage of the birds to more genial climates, the migration is unperceived, except by the few who watch it closely, but unlike this feature in animated nature, the looked for return is usually doomed to disappointment.

It is most important that our surplus shall be allowed to flow to the ocean as its natural inclination tends, unobstructed in its course by divergence through tortuous and long drawn out artificial channels, and by the most insidious and dangerous of all—the imposition of tolls calculated to exact "as much as it will bear." Should these barriers not be removed, for they are more or less permanent already, we shall as surely as night follows day, lose our markets, if we have not already made considerable progress in this direction.

A glance at a map of the country will show that the coast trends in a northeasterly direction, carrying with it to a remoter distance the ports as they occur upon its route, thus prolonging their lines of communication with the interior as compared with Baltimore.

The effect of this is to place in closer proximity our city, by many miles, than its northern rivals to every grain and pork producing State of the Union, while every bale of cotton, and every hogshead of tobacco, with the exception of what is grown in Connecticut in limited quantities, is produced in latitudes *upon* and *below* ours, and *should* pay the heavier tolls exacted in transit above us as a consequence of increased mileage. Of the total crop of the country, excluding California and Oregon, there is grown *upon* our parallel of latitude, and *below* it—of wheat 53 per cent. and of corn 76 per cent.; and in States *intersected by the same degree*—of wheat 46½ per cent. and of corn 60 per cent.

Even the Mississippi River leans over towards us, offering Saint Louis and Memphis as its contribution to our aggrandizement, receiving the Ohio, which has almost washed our confines at the point of its nearest approach. It is inexplicable that we should treat with indifference this kindly embrace of nature and permit rivals to rob us of her indulgences.

It is a source of weakness to the country at large that her trade should center and become unwieldy at one point, and it is in a greater degree a source of loss to railroads that they should have to reach and compete with each other at a common center, rather than in their own acknowledged and natural spheres.

Number of immigrants landed at Baltimore for ten years, from 1874 *to* 1883, *by direct steamer.*

Years.	Number.
1883	35,690
1882	41,739
1881	40,017
1880	17,394
1879	4,713
1878	3,612
1877	3,923
1876	5,093
1875	6,055
1874	15,116
Total	173,352

THE RELATIONSHIP THE COMMERCE OF A CITY BEARS TO ITS AVENUES OF TRANSPORTATION; CONDITIONS REQUISITE TO SECURE EFFICIENCY IN THE FEEDERS AND OUTLETS OF EVERY CITY.

The relationship existing between the commerce of a city and its avenues of transportation should be in very close alliance; and although it is not easy to lay down any special method of cementing them, it is unquestionably true that their intimacy and the spirit of co-operation tend largely, not only to promote the growth of the one, but to insure their mutual welfare. It may, however, be submitted that three conditions are requisite to secure efficiency in the feeders and outlets of a city.

They should afford unbroken railroad communication with the territory dependent upon, and tributary to, it; should this communication be imperfect, or become estranged or disconnected, the relationship will thrive indifferently, and the city will find that the hold upon its sphere of action relaxes, and that the coveted or the once possessed trade is beyond its reach, or is being directed to more capably served or more powerful rivals.

Transportation lines should be sufficient in number to afford free outlet for and well adapted to secure economical handling of any surplus of crops, which naturally flows to, or is attracted by, the city, as well as for the marketing of manufactured articles originating within its own boundaries. They should be, in the case of a city of the first importance, of the highest efficiency; they should pursue the shortest route to the seaboard, and thus to foreign countries, and by their superiority promote interchange of commerce abroad with the interior, each mutually the recipient and the dispenser, the city directing the operations.

Transportation lines should be not only aggressive and their interest in sympathy with those of the city, so as to maintain its commercial supremacy in its own territory, but they should be so extended as to push beyond this area, to obtain trade from the territory of competitive cities.

RAILWAY TRANSPORTATION BEARING DIRECTLY UPON THE COMMERCE OF BALTIMORE.

Baltimore quickly realized the inadequacy of means of transit to the growing West, and determined to compete as her natural right in the construction of the Baltimore and Ohio Railroad, for the advantage sought by New York in the construction of the Erie Canal.

This railroad, begun in 1828, was finished to the Ohio River in 1853. Between the years 1850 and 1860 the construction and development of eastern and western trunk lines was rapid, though the economic transportation of through freight over all-rail lines had not become perfected. This development was arrested by the war of States, at the close of which, in 1865, it immediately took new life, and has since that time progressed year by year to a marvelous extent. In the natural competition that followed, conceding our greater proximity to western points equivalent to an advantage to our port of about one-third, or as 66.8 to 100, New York has argued that to lift our freight over the mountain this advantage would be counterbalanced by the ease of her level grades. But nature is full of compensation, and the mountain becomes a mole-hill, from the fact that the mines in the neighborhood furnish the means of overcoming this obstacle with such a lavish hand that the fuel has only to be picked up and made available. On this route the coal can be had at 90 cents per ton that commands at the seaboard from $2.50 to $4 per ton. This advantage is demonstrated in the item of operating expenses of the Baltimore and Ohio Railroad, being remarkably less than in the case of either the New York Central, the Erie, or the Pennsylvania Railroad Companies.

It was this principle of proximity alone, that finally through the advisory commission in the year 1882, composed of the Hons. A. G. Thurman, Elihu B. Washburn, and T. M. Cooley, established for Baltimore differentials, inadequate though they be, in her favor, which restored peace, temporarily, and gave fair promise of securing immunity from frequently recurring wars between the eastern and western trunk lines. The five lines terminating at the river front, in this harbor, reach the following States directly, and *all* the States and Territories by close connection:

Baltimore and Ohio Railroad.—Maryland, Pennsylvania, Virginia, West Virginia, Ohio, Kentucky, Indiana, Illinois, Missouri, Iowa, and the West, Northwest, and Southwest.

Northern Central and Pennsylvania Railroad—Maryland, Pennsylvania, New York, Ohio, Kentucky, Indiana, Illinois, Missouri, Wisconsin, Michigan, and Western and Southwestern States.

Philadelphia, Wilmington and Baltimore Railroad.—Maryland, Delaware, Pennsylvania, New Jersey, New York, and all the New England States and the Canadas.

Western Maryland Railroad—Maryland, Pennsylvania, and the Shenandoah Valley of Virginia.

Baltimore and Potomac Railroad—Maryland, Virginia, the Carolinas, Georgia, Alabama, and Florida. This line, however, is not utilized as an all-rail freight line with the States named. No freight is shipped beyond Danville from Baltimore by this route. This also connects through the Virginia Midland Road with the Chesapeake and Ohio Railroad for Virginia, Kentucky, and Tennessee. It is probable that the Western Maryland Railroad will at no distant period, by extension, reach the Vanderbilt system, and thus open another avenue to the West, while the Baltimore and Ohio road by its Philadelphia and New York extension offers another independent line to the East.

DOMESTIC LINES OF WATER COMMUNICATION TO AND FROM BALTIMORE.

Baltimore Steam Packet Company (Old Bay Line) to Norfolk, Va., and the Southern Atlantic States; Baltimore, Richmond and Chesapeake Steamboat Company to West Point, Va., Richmond, Southern, and Southwestern States; Merchant and Miners' Steamship Company to Boston, Mass., and Providence, R. I., Charleston, S. C., and Savannah, Ga.; Baltimore and Wilmington Steamship Company to Wilmington, N. C.; Baltimore, Washington and New Berne Steamship Company to New Berne, N. C.; Eastern Shore Steamboat Company to towns on eastern shore of Maryland; New York Transportation line to Philadelphia and New York (canal); Maryland Steamboat Company to tributaries of the Chesapeake Bay in Maryland; Weems Line to Rappahannock River; Potomac Steamboat Company to points on Potomac River; Choptank River Steamboat Company; Chester River Steamboat Company; Susquehanna Steamboat Company.

LINES OF STEAMSHIP TO FOREIGN PORTS.

North German Lloyd, Bremen, almost weekly; Allan Line, Liverpool, via Halifax, fortnightly; Union line, Liverpool, via Bermuda, monthly; Johnston Line, Liverpool, fortnightly, with irregularity; Hooker's line, Liverpool, irregularly; Netherlands-American Steam Navigation Company, Rotterdam and Amsterdam, fitfully; French line, Havre—with numbers of irregular steamers, known as rovers, to any port offering freight. Other regular services are contemplated and will be inaugurated should rates of freight assume more favorable range.

The transportation lines, by rail and water, therefore reach every State and Territory, also the Canadas and Mexico; and every section of the foregoing traversed by

freight lines, all to a certain extent, are tributary to Baltimore. This must be recognized not only in the distribution of her imports of coffee, iron, steel, and copper ores, hides, foreign fruits, sugar, guano, chemicals, and salt, but also in that of her home manufactured products, such especially as cotton duck, canned goods, machinery, clothing, manufactured tobacco, fertilizers, shoes, woolen, cotton, and straw goods, which are distributed from this market over the entire northern portion of the continent.

THE RELATIONSHIP EXISTING BETWEEN THE BALTIMORE AND OHIO RAILROAD COMPANY AND THE CITY OF BALTIMORE, AND THE CONSEQUENT RESPONSIBILITY OF THE FORMER TO THE LATTER.

With the Baltimore and Ohio Railroad Company we yearn for the fulness of such a sympathy as that suggested, and it is in this spirit and with the utmost loyalty that we venture to notice some points in which we feel aggrieved. We thoroughly recognize the right, as well as the duty, of its management to promote the interests of its stockholders to the fullest extent. We fully acknowledge the benefits the city has derived from its recourses, and we appreciate the method, the energy, and the splendid genius—for it has been more than mere ability—of the chief who has carried it through besetting difficulties, at which many looked with despair, to the proudest position of any railroad company, and, we think we may add, any corporation in the land.

In looking back upon the history of the road, tracing its career through its earliest struggles to ultimate success, it will be perceived that the obligations under which it rests towards the city of Baltimore are of the most uncompromising nature, and that it continues to avail of an immunity from taxation which, by the bounty of the city, was conceded when its fortunes were at the lowest and its future prospect doubtful.

Every property owner in the city is thus contributing directly to the dividends of the company, which has practically become a private concern, inasmuch as, were the first three largest proprietors and as many of much more moderate pretension erased from the roll of stockholders, the disintegrated remainder would scarcely represent an amount of stock much, if at all, beyond the capital required for a narrow gauge road of the most limited proportions.

The city itself, however, it should be allowed, is the second considerable owner of the stock.

Under such circumstances may we not be permitted to criticise its policy?

Among the many points of dispute that have been brought before the trunk line commission, that of a differential in favor of Baltimore engaged much attention in commercial circles, and it is conceded that in enforcing this claim, and obtaining satisfactory adjustment, the policy of the Baltimore and Ohio Railroad Company cannot be too strongly commended.

But that company, in yielding to the combined demands of the New York lines of transportation, has permitted such an enormous reduction to be made in the differentials, as to obliterate almost entirely Baltimore's greater proximity of 200 miles to the West, which result, in the mortification attending its realization, compels one to think that the much vaunted policy of that company in the matter of differentials, if there be identity of interests between them and ourselves, has proved a delusion.

Upon a basis of distance it is freely conceded that Baltimore is entitled to great differentials. She is, however, prepared to accept the rates made upon the present basis, always provided they are maintained to and from New York.

But by reason of the company's policy during a war of rates, this stipulation rarely, if ever, prevails; hence, such a war, always considered as a misfortune to Baltimore, is to be apprehended with alarm.

The Baltimore and Ohio Railroad Company, of the two trunk lines competing at this point, appears to have the control over rates, and, to a great extent, molds the policy which governs transportation to and from Baltimore and the West.

To this company is allotted 70 per cent. and to the Northern Central Railway Company 30 per cent. of the pooled business.

In gaining the prestige which secured her this advantage it may be stated she has been greatly assisted by the trade of Baltimore, who have given to the line the great bulk of freight, composed of general merchandise and manufactured goods, as during the year 1883 the shipments were as follows:

	Tons
Per Baltimore and Ohio Railroad	432,3
Per Northern Central Railway Company	254,6

Notwithstanding these facts, it appears to have been the practice of the Baltimore and Ohio Railroad Company during recent years, as a rule, to maintain full rates *and from this* point, during the continuance of a war of "cut-rates" between the *different transportation* lines centering in New York.

Under such circumstances this has continued to be the rule, until it was ascertained that their traffic suffered diminution thereby, or until outside pressure could no longer be resisted.

To such an extent has this been the case that full rates have been maintained, for months at a time, against rates to the West from New York, which had been cut 33⅓, 50, and even 75 per cent.

Indeed, there have been times when the rates on grain and other east-bound goods to Baltimore have been cut, whilst the standard rates on west-bound freight from Baltimore were maintained, notwithstanding the rates from New York, on both east- and west-bound goods, had been very considerably lowered.

Proof is not lacking that freights for the West have been repeatedly taken by the agent of this company at Boston and New York at rates lower than obtained from Baltimore to the same points, and on identically the same kind and class of goods.

Authentic correspondence has shown that this point not having been gained, shipments have been diverted in favor of New York, and a case can be cited in which this hindrance once removed this market will regain the preference.

The time was when the Baltimore and Ohio Railroad Company protected the city's interests by immediately applying to Baltimore such reductions as were made to or from New York.

But the policy now urged by the company, on information of a cut-rate, is to apply to the pool commissioner for an order to have the standard rate restored.

Thus, sometimes, weeks lapsing into months before the situation may be changed in conformity with such order of the Commissioner, undue advantage is gained by the New York shipper, to the manifest injury of the Baltimore shipper, who, meantime, must either tamely submit, pay a royalty to his constituent in the form of rebate, or discontinue the business.

It is claimed, perhaps justly, that this company in protecting the interests of Baltimore and thereby its own, by adopting the principle, as against the New York transportation lines, of giving it differential rates, has made large sacrifices.

This, if it be so, together with the fact that the company has pledged itself by a binding agreement with other trunk lines to maintain rates, is a forcible argument in its defense. But does such an obligation hold with the company when it can be proved that the pledge has been violated by any party to it?

Concerning the loss sustained, as alleged by this company, it should be viewed as one of the contingencies inevitable to all business, to be repaired by just means, not by possible injury to the commerce of a city that extended a helping hand in time of need, or it should be borne by its stockholders with the equanimity of which they might be capable in view of the liberal dividends usually enjoyed by them. But the city of Baltimore looks with complacency at the finessing of her recreant and over-indulged foster-child in the profitable mazes of the trunk pool, happy in the collection of her respectable dividend, and taking no thought of the fortunes of her own growing family, who, alike regardless of their interests, maintain a passive acquiescence, while the more wide awake and energetic Northern stranger avails of the opportunities, and thus the unstable and weak yield passively.

It is this indolence that has involved us in the labyrinths, of this trunk pool system that has been the means of making us parties to a compact whereby "the western shippers shall not sendtheir products to tidewater by the shortest routes, except upon the condition that they shall pay the cost of carrying by the longest route;" that acquiesces in the palpable blunder of exacting the same rates of carriage upon two cars of grain bound from a western depot, the one to Baltimore, the other to New York, although the one has reached its destination when the other has 272 miles still to accomplish.

Hear Mr. Blanchard, a vice-president of the New York, Lake Erie and Western Railroad:

"We are not called upon by any mercantile principle or usage to carry that extra distance for nothing, and there are no 272 miles of railroad that can be built for nothing, can be worked for nothing, that should be given to the public, for nothing."

It is the toleration of such a scheme that places before the Pennsylvania Railroad, with, say, a million tons of freight at Harrisburg, the dilemma of being mulcted with the same rates to Baltimore, 91 miles; Philadelphia, 106 miles; and New York, 195 miles; that yields to a Baltimore shipper a lower rate of freight to the West, by first sending his goods to New York, to be received there by the agent of the Baltimore and Ohio Railroad, to be dispatched by them to their destination; and it is the repose in the same poverty of public spirit that surveys with complacency large shipments of cotton from Saint Louis and Memphis to Liverpool, via Boston, while our steamships, hungering for such freight, are competing in Savannah, Charleston, and Norfolk with vessels loading thence for Europe, and from the usually poor rates obtained compelled to submit to deductions of the greater portion for transit charges by coasting steamers to Baltimore.

And what shall we say of west-bound laden cars returning empty to Baltimore; of elevators overflowing upon one side of our harbor and empty upon the other, as has

been the case during the past year; of the commissioner's enunciation of his belief in the theory that "it is necessary to charge higher rates on certain articles (western bound) in order that grain and other food products can be carried at a rate enabling the farmer to ship to the East and to Europe"? Such consideration for the farmer is rare on the part of a railroad official, and rather hard upon the poor uncared-for manufacturer. The reign of expediency has superceded the reign of principle, and under its benign rule anarchy and general disorder pervade the entire carrying system of the whole country.

In Baltimore we have submitted to, or our representatives have agreed with the railroad commissioners that a differential rate in our favor of 3 cents on 100 pounds grain (of which, by the way, 1.8 cents per bushel is lost in the charge made by the elevator) is sufficient for us, below the rates to New York—at least, they have meekly yielded the point.

Hear Mr. Albert Fink, taking Cincinnati as a basis, in a letter to a New York merchant, dated June 20, 1878. He defended the differential rates against the merchant, who demanded equal rates, and proved that while Baltimore only obtained an average "differential of 5¼, it was, by the test of distance alone, entitled to 17½ cents." He goes on to show in the same letter that if the test of cost of transportation per ton per mile were applied, the differential in favor of Baltimore would have been greater.

Hear Mr. Alexander, vice-president of the Louisville and Nashville Railroad: "It is as communistic to rob any investment of that portion of its value due to location as of that due to cost."

We have certainly been robbed, not only of our location, but we have had no consideration for our remote position from European ports and the consequently higher rates of ocean freight with which we are handicapped, for, notwithstanding statements to the contrary, made by rivals, our rates vary from 100 per cent. to 20 per cent. above New York berth steamers.

We submit a table exhibiting the differential rates from 1870 to 1882:

Years.	Baltimore.	Philadelphia.	Years.	Baltimore.	Philadelphia.
1870	$1 00	$1 00	1877	$0 60	$0 [illegible]
1871	1 00	1 00	1878	60	[illegible]
1872	1 00	1 00	1879	60	[illegible]
1873	1 00	1 00	1880	60	[illegible]
1874	1 00	1 00	1881		
1875	1 00	1 00	1882	60	[illegible]
1876	1 00	80			

There can be little question but that, overweighted as we have been, and are, by this unfair compact, we should still maintain a reasonable position were we assured that the differential would be strictly enforced. We were told that very heavy penalties would follow the roads that did not comply with the bond of agreement. The whole affair, however, has been a farce. "Cutting" of rates has been exceedingly common, and, indeed, unnoticed by the parties to the agreement, so long as they did not seriously interfere with each other and so long as the public could be pacified into submission.

There is no influence so effectual as public opinion properly directed, and the merchants of this city, properly realizing their power to secure what is their due, will strive to obtain the redress needed.

Should war be declared it should be gallantly met. Our Baltimore and Ohio Railroad has been honestly built, and its finances honestly administered. Its stock at near 100 per cent. premium, an unincumbered reserve of over $45,000,000, and the smallest capital of the trunk roads.

New York Central and Hudson River Railroad	$89,428,300
New York, Lake Erie and Western Railroad	75,379,300
Pennsylvania Railroad	68,870,200
Baltimore and Ohio Railroad	14,783,300

The relative cost of operating, as compared with receipts, has been for ten years—

	Per cent.
New York Central and Hudson River Railroad	68.68
Pennsylvania Railroad	64.12
Baltimore and Ohio Railroad	62.76

And for 1881 and 1882—

New York Central and Hudson River Railroad	71.08
New York, Lake Erie and Western Railroad	65.50
Pennsylvania Railroad	57.98
Baltimore and Ohio Railroad	59.44

But if the Baltimore and Ohio Railroad Company forgets, in its hour of prosperity, the city that came to its aid, with the natural expectation of benefits to be derived; if on the principle that "Man proposes, God disposes" years have wrought out such changes that the obligation no longer exists, or must be ignored; and if it be true that the share of the city in the directorship can only be nominal, and, as some may think, possessing no weight; and if no remedy from within can be applied, it would appear to be fair reasoning to advise the city to dispose of its interest, and transfer a modicum to a quarter from which greater benefit may be anticipated.

NECESSITY OF DIRECT ALL-RAIL FREIGHT CONNECTION WITH THE SOUTHERN STATES.

The system of trunk lines (created by consolidating lesser lines) which bring to the terminus, without any intervention or delay and at a minimum expense, the contributions of their extreme limits, must, it would appear, be adopted in the interest of Baltimore in her relationship with the Southern States, instigated by nature's first law of self preservation, in order that a freight connection may be perfected and retained with North Carolina, South Carolina, Georgia, Alabama, Tennessee, and such other Southern States as is now only obtained by part water and part rail transportation. In the existing imperfect mode of conveyance are entailed, to an extent, breakage, leakage, and delay, that, in these days of quick transit, cannot longer be tolerated. Undoubtedly, in any step to her own advancement, Baltimore must, herself, take the initiative. It is no longer a conviction that she should have an all-rail freight line, terminating here, under one management, and worked to develop her trade with the Southern States; it has become a determination, soon to be put into execution. When established, the character of imports and exports will be greatly varied. Grain, tobacco, and cotton, by natural inclination, flowing in, other productions will follow in their wake, and the commerce of the port will pursue its independent course, collecting and distributing, at minimum cost, its own products, as well as those of every other clime.

A city that has profited by having so largely invested in a trunk line to the West, if it appears that there may be danger of its becoming merely a way station through the policy of such line, should not hesitate to rescue itself from this destiny by strengthening itself in other directions. Fear of this should be an incentive; its realization must not be contemplated with apathy. In future, the citizens of Baltimore must cease to look to the Baltimore and Ohio Railroad Company, as they have hitherto done, as the only or principal agency in advancing the city's interests; although the city has the privilege of being one of the largest owners in that corporation, it has no control over its policy. It is futile any longer to expect from that quarter assistance in securing or building a southern line, as it has been publicly declared by one of its high officials that the company will not invest in any southern railway system. Of the plans suggested by which to secure the southern connection, and render the position unassailable, the more feasible one appears to be that of uniting the Richmond and Danville and Virginia Midland Railway systems with a line from this point to Alexandria, Va., or by making a traffic contract with the existing lines between Alexandria and Baltimore upon a mileage basis, with liberty of running solid freight trains to and from Baltimore, thus completing the through connection, and for a generation, perhaps, securing the benefits of a most intimate commercial relationship with the cotton belts. That this result will be secured is strongly indicated by the present movement on the part of the owners and managers of southern railways, looking to the extension and operation of their respective systems to northern cities, viz: the Richmond and Danville Railroad having acquired the Virginia Midland Railroad to Alexandria, are looking to Baltimore as a suitable terminus; the Virginia, Tennessee and Georgia Air Line through the Norfolk and Western and Shenandoah Valley Railroads are looking to Baltimore and Philadelphia as termini, and the Atlantic Coast Line, having recently acquired the road from Weldon to Richmond, making a continuous line from the latter city to Savannah, will, doubtless, push further northward, either by ownership of a direct continuous line or by making a traffic contract with connecting lines; thus the larger eastern or northern cities that afford the greater volume of business, both freight and passenger, will be the objective points. These cities are recognized as possessing the ability to supply a vast amount of tonnage, being markets of original production and distribution as seaports, with steamship communication with every important port in Europe, large populations, diversity of need and tastes, and all the concomitants of civilization. In pursuit of this scheme the most important city in the topography of the country which those southern systems must traverse in their eastward course is Baltimore.

The following tables exhibit the growth in population of Baltimore, compared wit the Atlantic coast ports and those on the Gulf of Mexico, by decades:

Cities.	1840.	1850.	1860.	1870.	188.
Boston	93,383	136,881	177,840	292,499	.....
New York	312,710	515,547	805,658	942,292	1,206,1
Philadelphia	258,037	461,421	565,529	674,022	847,1
Baltimore	134,379	169,054	212,418	267,354	*405,1
Norfolk	27,569	33,036	14,620	19,229	21,1
Wilmington	4,744	7,264	9,552	13,446	17,1
Charleston	29,261	42,985	40,522	48,956	49,1
Savannah	11,214	15,312	22,292	28,235	30,1
Mobile	12,672	20,515	29,258	32,034	29,
New Orleans	102,193	116,375	168,675	191,418	216,

*This 405,313 includes 73,000 of that portion of the city called "the Belt." The city proper is c fined within circumscribed limits, which it has long since outgrown. Several attempts have been m through the State legislature to enlarge them, which, though acceptable to the inhabitants themsel have been defeated by the influence of those who would thereby lose much of their political patron Before long these imaginary lines must disappear, as in other cities. The district is rapidly becon popular and desirable for residence, enjoying all the conveniences of city water, gas, and postal livery. No opposition can long defer this desired attainment. Annexation once accomplished. taxable basis will be adjusted to include all those now enjoying the privileges which attach to the and who at the present time fail to contribute their quota to its support.

The population of western cities, or cities measurably tributary to Baltimore, h increased as follows:

Cities.	1840.	1850.	1860.	1870.	188
Chicago	4,470	29,963	109,260	298,977	503
Saint Louis	16,469	77,860	160,773	310,684	350
Cincinnati	46,338	115,435	161,044	216,239	255
Cleveland	6,071	17,034	43,417	92,829	160
Indianapolis	2,692	8,091	18,611	48,244	75
Toledo	.....	3,829	13,768	31,584	50
Louisville	21,210	43,194	68,033	100,753	123
Nashville	6,929	10,165	16,988	25,865	43
Memphis	.....	8,841	22,623	40,226	33

The growth of Baltimore, in the period of forty years above noted, is very p nounced. New York shows the greatest rate of progression, its population having, in same period, quadrupled, while the population of the cities of Baltimore, Philadelp and Boston have each been tripled. It may be said, however, of the cities of Philadel and Boston that this has been effected by the annexation, in one case, of whole to and counties, and in that of the other, of towns which are only such in compari with the absorbing power, but are, in reality, cities themselves. In comparing B more with the ports south of it, will be observed that her increase has been, as sh have been expected, much more important and with a more uniform and healthy of progression. In considering the cities which have been created in the once " West," their growth has been simply phenomenal, and comparison except in the of some of the older ones, such as Saint Louis and Cincinnati, is almost useless.

The following tables exhibit the growth, since 1841, of railway systems tributar Baltimore:

Number of miles of railway completed in the States in the years named.

Years.	Delaware.	Maryland.	Pennsylvania.	West Virginia.	Ohio.	Kentucky.	Tennessee.	
1841	39	259	754	61	36	28	.....	
1851	39	274	1,297	159	588	94	112	
1861	127	386	2,802	361	2,947	549	1,253	
1871	200	820	4,742	533	3,740	1,121	1,520	
1875	272	929	5,705	615	4,461	1,326	1,630	
1880	275	1,012	6,243	694	5,912	1,598	1,824	
1881	275	1,030	6,331	706	6,321	1,734	1,902	
1882	282	1,063	6,857	813	6,931	1,807	2,067	

Number of miles of railway completed, &c.—Continued.

Years.	North Carolina.	South Carolina.	Georgia.	Alabama.	Mississippi.	Louisiana.	Texas.	Indiana.	Illinois.
1841	87	204	271	46	14	40	.....	.....	22
1851	283	378	795	183	75	80	.....	588	271
1861	937	973	1,420	743	862	335	397	2,175	2,917
1871	1,190	1,201	2,108	1,496	990	466	865	3,529	5,904
1875	1,356	1,335	2,264	1,800	1,018	466	1,6?5	3,963	7,109
1880	1,499	1,429	2,535	1,851	1,183	633	3,293	4,454	7,955
1881	1,622	1,479	2,540	1,859	1,188	937	4,926	4,406	8,309
1882	1,759	1,517	2,874	1,909	1,309	1,032	6,007	5,018	8,752

Thus it will be seen that year by year the advance of this city has corresponded with the expansion of the system of railroads, and step by step the relationship may be traced, indicating, to the commercial mind, their dependence upon each other, the market finding its natural attraction to the great centers, and the rail putting forth a helping hand to develop desert into field, village into town, and town into city.

Baltimore, occupying a naturally favored position, can easily reach the lake, the coal field, the cotton field, the granaries of the West, and the cities on the other shore of the Atlantic.

Statement showing taxable basis, per assessment of property, rate of taxation per $100, *and debt, of nine of the principal cities of the United States, for the years* 1877 *and* 1882.

Cities.	Property value 1877.	Rate per $100.	Property value 1882.	Rate per $100.	Debt.
New York	$1,101,092,093	$2 65	$1,233,476,398	$2 25	$96,141,948
Boston	686,840,586	1 31	672,490,100	1 31	34,940,548
Philadelphia	602,313,387	2 16	553,775,299	1 90	40,517,256
Brooklyn	227,013,123	.....	298,000,000	2 32	37,483,723
Baltimore	256,105,341	1 75	249,278,701	1 37	28,522,034
Cincinnati	183,952,966	1 93	166,946,105	2 38	23,939,579
Saint Louis	179,687,320	2 40	191,720,500	2 25	21,905,753
Chicago	148,400,148	2 04	125,360,736	3 37	12,485,794
Richmond	.....	.....	28,946,828	.....	4,758,397

With regard to tax rates, Baltimore stands at the head of the list of these cities, her tax per $100 being in proportion to taxable basis less than any other. In the aggregate value of property constituting the taxable basis the following is the order of rank: New York, Boston, Philadelphia, Brooklyn, Baltimore, Saint Louis, Cincinnati, Chicago, Richmond. The relation of the debt to the taxable basis in each city is as follows: Boston, 5 per cent., Philadelphia, 7½ per cent., New York, 8 per cent., Chicago, 10 per cent., Baltimore and Saint Louis, 11 per cent., Brooklyn, 12½ per cent., Cincinnati, 14 per cent., Richmond, 16 per cent.

The decline in property value, in the case of Baltimore, from $256,000,000 to $249,000,000, between the years 1877 and 1882, represents the amount of manufacturing plant exempted from taxation, which took effect in the latter year (*vide* article on manufactures). The "improvements," which comprise all constructions, whether new or old, were as follows: 1879, 1,462; 1880, 1,496; 1881, 1,799; 1882, 2,300; 1883, 3,010. Within the district called "the Belt," or that portion of the suburbs within a half mile of the city limits, there have been erected, since 1880, from seven hundred to eight hundred dwelling houses.

The commerce of Baltimore for the year 1883, as indicated by the tonnage reports of her respective rail and water lines, is as follows:

Tonnage in detail of the Baltimore and Ohio Railroad for 1883.

[Tonnage classified, as to avoirdupois, in the order of importance.]

Receipts.	Pounds.	Shipments.	Pounds.
Products of mines	3,324,801,300	Merchandise and other	644,[illegible]
Products of agriculture	730,306,700	Manufactures	220,327,200
Merchandise	363,638,500	Products of mines	141,812,700
Products of animals and live animals	270,917,200	Products of agriculture	55,423,200
Products of forest	199,490,700	Products of animals and live animals	39,646,700
Products of manufactures	54,830,800	Products of forests	24,001,900
Total receipts	4,943,985,200	Total shipments	1,125,551,500

Tonnage in detail of the Northern Central Railway Company for 1883.

[Tonnage receipts classified, as to avoirdupois, in the order of their importance.]

Receipts.	Pounds.	Shipments.	Pounds.
Products of the mines	1,625,029,912	Products of mines (iron ore)	493,973,[illegible]
Products of agriculture	1,046,674,841	Products of manufactures	380,612,[illegible]
Products of manufactures	288,418,795	Merchandise	128,650,[illegible]
Products of forests	203,843,585	Products of forests, lumber	102,353,[illegible]
Products of animals	150,733,093	Products of agriculture	65,506,[illegible]
Merchandise and other articles	88,100,189	Products of animals	15,274,[illegible]
Total receipts, Baltimore	3,402,800,415	Total shipments, Baltimore	1,186,371,[illegible]

Tonnage in detail of the Philadelphia, Wilmington and Baltimore Railroad for 1883

[Tonnage classified, as to avoirdupois, in the order of importance.]

Receipts.	Pounds.	Shipments.	Pounds.
Manufactures	495,178,084	Manufactures	228,748,900
Products of agriculture	100,340,485	Products of animals	186,960,375
Merchandise and other	51,154,507	Products of forests	127,667,700
Products of mines	38,955,384	Products of agriculture	123,963,089
Products of animals	24,695,685	Products of mines	37,243,964
Products of forests	11,958,288	Merchandise and other	31,806,821
Total receipts	722,282,433	Total shipments	736,380,900

Tonnage in detail of the Baltimore and Potomac Railroad for 1883.

[Tonnage classified, as to avoirdupois, in the order of importance.]

Receipts.	Pounds.	Shipments.	Pounds.
Products of Agriculture	179,929,582	Products of mines, quarries, &c.	286,096,614
Products of forests	83,206,606	Products of manufactures	245,270,781
Products of animals	55,703,004	Products of agriculture	93,200,703
Products of manufactures	48,677,955	Products of animals	67,323,784
Products of mines, quarries, &c.	28,810,229	Products of forests	32,526,557
Merchandise and other articles	3,250,876	Merchandise and other articles	21,007,347
Total receipts	399,578,252	Total shipments	745,425,786

Tonnage in detail of the Western Maryland Railroad for 1883.

[Tonnage classified, as to avoirdupois, in the order of importance.]

Receipts.	Pounds.	Shipments.	Pounds.
of agriculture	142, 792, 331	Miscellaneous and merchandise	78, 634, 177
ise and miscellaneous	76, 929, 518	Manufactures	34, 921, 786
of mines	27, 309, 475	Products of forests	9, 512, 246
	24, 906, 240	Products of mines	4, 493, 390
of forests	5, 676, 967	Live-stock	4, 930, 650
ires	560, 700	Products of agriculture	3, 410, 792
l receipts	278, 175, 231	Total shipments	135, 903, 041

Tonnage in detail of the Maryland Central Railroad for 1883.

[Tonnage classified, as to avoirdupois, in the order of importance.]

Receipts.	Pounds.	Shipments.	Pounds.
ods	7, 294, 000	Merchandise	12, 276, 000
	6, 102, 000	Fertilizers	8, 158, 000
	4, 034, 000	Coal	7, 708, 000
	3, 262, 000		
	2, 050, 000	Total shipments	28, 142, 000
	273, 220		
	55, 000		
l receipts	23, 070, 220		

npossible to give detailed statement of tonnage by steam and sail, either
or foreign.

tement of tonnage of foreign steamers and sailing vessels for the year, 1883.

s	number	710
essels	do	1, 340
tonnage	tons	762, 311
l tonnage	do	787, 375

tement of tonnage of domestic steamers and sailing vessels for the year 1883.

s:		
ber		75
vals		1, 872
onnage	tons	2, 935, 760
l tonnage	do	3, 865, 909

er of sail.—It is impossible to give correct data of the number of sail em-
In 1880 there were arrivals of oyster-laden vessels to the number of 9,543, av-
23.38 tons each, some thousand of large sail laden with grain, lumber, and
d thousands more bringing in melons and other produce in season.

e of Baltimore, as shown by the total inward and outward tonnage, by all lines, for the past four years, in pounds.

Lines.	1880.		1881.	
	Received.	Shipped.	Received.	Shipped.
and Ohio Railroad	5, 022, 437, 000	1, 302, 948, 100	5, 379, 385, 300	1, 487, 019, 300
Central Railway	2, 938, 038, 514	700, 001, 754	3, 134, 782, 225	1, 104, 620, 347
and Potomac Railroad	99, 442, 943	304, 473, 113	101, 753, 266	471, 023, 763
(domestic)	2, 062, 352, 000	3, 183, 508, 000	3, 176, 408, 090	3, 356, 468, 000
ssels (domestic)	2, 614, 370, 000	2, 404, 000, 000	2, 387, 518, 000	2, 715, 382, 000
steamer and sailing ves-	2, 654, 192, 000	2, 858, 770, 000	2, 445, 856, 000	2, 206, 840, 000
al	15, 390, 832, 457	10, 753, 700, 967	16, 625, 702, 791	11, 341, 353, 410

Commerce of Baltimore, as shown by the total inward and outward tonnage, &c.—Cont'd.

Lines.	1882.		1883.	
	Received.	Shipped.	Received.	Shipped.
Baltimore and Ohio Railroad	4, 762, 839, 300	1, 230, 211, 000	4, 943, 965, 200	1, 125, 551, 500
Northern Central Railway	2, 897, 462, 340	1, 156, 556, 653	3, 402, 800, 415	1, 186, 271, 305
Philadelphia, Wilmington and Baltimore Railroad			722, 282, 433	736, 288, 000
Baltimore and Potomac Railroad	304, 157, 996	636, 616, 125	399, 578, 252	745, 424, 786
Western Maryland Railroad	194, 668, 916	130, 938, 923	278, 175, 221	135, 903, 041
Maryland Central Railroad			22, 786, 000	28, 142, 000
Steamers (domestic)	3, 308, 800, 000	4, 310, 840, 000	3, 565, 940, 000	4, 947, 600, 000
Sailing vessels (domestic)	1, 634, 820, 000	2, 591, 080, 000	2, 305, 560, 000	2, 785, 120, 000
Foreign (steamer and sailing vessels)*	1, 581, 406, 000	1, 612, 892, 000	1, 524, 622, 000	1, 574, 750, 000
Total	14, 684, 154, 552	11, 671, 134, 701	17, 165, 729, 531	13, 265, 342, 653

* Includes all tonnage via Baltimore Steam Packet Company, Richmond and York River, Merchants and Miners', Savannah, Charleston, and all other lines.

THE COMMERCE OF BALTIMORE WITH THE SOUTHERN STATES, COMPARED WITH THE SAME MOVEMENT FROM THE PRINCIPAL EASTERN CITIES, AS INDICATED BY THE TONNAGE OF THE FOUR PRINCIPAL RAILWAY LINES.

The following statement, which is included in the foregoing tonnage tables, page— showing total inward and outward tonnage (under the head of domestic steamers) i shown separately, indicating the relative movement or distribution of general mer chandise to and from the principal eastern cities, viz: Boston, New York, Philade phia, and Baltimore, and to and from the Southern States:

Statement of tonnage via the Richmond and Danville line from September 1, 1877, *to Au gust* 31, 1882.

	1877–'78.	1878–'79.	1879–'80.	1880–'81.	1881–'82.	Total fi ye
South bound.						
From Baltimore	15, 567	23, 920	25, 655	27, 694	37, 304	12
From Philadelphia	4, 364	6, 390	7, 563	7, 057	8, 491	3
From New York	6, 970	12, 464	16, 153	16, 024	18, 259	6
From Boston	964	2, 563	4, 333	5, 620	5, 827	1
Total	27, 865	45, 337	53, 704	56, 395	69, 881	25
North bound.						
To Baltimore	7, 031	8, 955	11, 991	8, 835	12, 538	4
To Philadelphia	5, 675	6, 757	7, 811	7, 509	10, 725	3
To New York	15, 064	22, 218	19, 962	22, 934	23, 516	10
To Boston	2, 434	3, 512	8, 699	9, 179	11, 041	3
Total	30, 204	41, 442	48, 463	48, 457	57, 820	22

Statement of tonnage via the Atlantic Coast line from September 1, 1877, *to August* 1882.

	1877–'78.	1878–'79.	1879–'80.	1880–'81.	1881–'82.	Total ye
South bound.						
From Baltimore	15, 197	3, 734	29, 884	29, 392	25, 964	123
From Philadelphia	3, 664	1, 836	4, 634	3, 634	4, 102	19
From New York	6, 300	6, 962	8, 856	8, 361	6, 440	36
From Boston	2, 277	339	3, 534	3, 221	3, 057	14
Total	26, 838	36, 826	46, 908	44, 608	39, 563	194
North bound.						
To Baltimore	3, 116	3, 734	7, 140	7, 095	7, 239	28
To Philadelphia	1, 575	1, 836	3, 685	4, 698	5, 208	17
To New York	8, 797	7, 716	10, 245	9, 967	8, 000	44
To Boston	871	339	801	1, 836	2, 868	6
Total	14, 359	13, 625	21, 871	23, 596	23, 315	96

)f tonnage via the Seaboard Air-Line from September 1, 1877, *to August* 31, 1882

	1877–'78.	1878–'79.	1879–'80.	1880–'81.	1881–'82.	Total five years.
South bound.						
ıore	11,705	15,024	21,730	26,857	21,653	96,969
lelphia	1,184	1,123	2,100	2,149	1,810	8,366
ork	3,478	5,100	8,187	7,770	6,271	30,806
a	393	1,035	2,259	2,080	937	6,704
	16,760	22,282	34,276	38,856	30,671	142,845
North bound.						
e	5,462	6,100	12,972	16,225	17,306	58,065
hia	916	1,101	2,972	2,014	2,203	9,206
k	4,874	6,080	13,806	10,577	10,578	45,915
	564	501	2,251	2,501	399	6,216
	11,816	13,782	32,001	31,317	30,486	119,402

)f tonnage north and south bound, carried over Norfolk and Western Railroad nts named below to all points reached by Virginia, Tennessee and Georgia Air-tons of two thousand pounds.

	1880.	1881.	1882.
South bound.			
n	16,238	20,396	20,069
York	45,760	45,196	49,512
lelphia	10,354	10,670	10,533
ıore	24,917	27,740	30,903
North bound.			
	34,017	36,658	33,321
k	27,683	32,171	26,274
phia	8,292	15,202	9,043
e	13,323	15,122	13,913

TONNAGE STATEMENT.

nt on page 89 shows the amount transported by each railway line terminat-timore, also the amount received from and delivered to steam and sailing reign and domestic.

les which immediately follow show the total tonnage of the principal rail-of Virginia, North Carolina, South Carolina, Georgia, and Tennessee, from ew York, Philadelphia, and Baltimore, the four principal eastern markets ıply this section of the country.

ıst statistics are interesting, as they display clearly the large percentage of interests in this direction over that of the cities previously mentioned.

y advance in its jobbing trade, over other markets, has been experienced e past few years.

:hmond and Danville Railroad, from its tide-water termini at West Point nond, controls a service of bay steamers with Baltimore, connecting the s route of 2,000 miles, with Columbia, Augusta, and Atlanta, Ga., and with ate points on branch roads through the States of Virginia, North and South and Georgia.

:ial tonnage reports of this system show that out of a total of 69,881 tons nd freight in the years 1881 and 1882, Boston furnished 5,827 tons; New 59; Philadelphia, 8,491; and Baltimore, 37,304 tons.

xhibit, made in the business of the Atlantic Coast Line, which, with simi-ır connection from this port, extending from Portsmouth, Va., to Wilming-leston, and Savannah, 700 miles, out of a south-bound traffic for the years 1882 amounting to 39,563 tons, shows that Boston supplied 3,057 tons; New 16; Philadelphia, 4,102; and Baltimore, 25,694 tons.

ıe is true also of our shipments over the Sea-board Air Line (with similar

steamboat connections to those of the other lines), extending from Norfolk to Raleigh and Charlotte, N. C., and covering an extent of 600 miles. Out of a total of southbound freight of 30,671 tons, Boston supplied 937 tons; Philadelphia, 1,810; New York, 6,271; and Baltimore, 21,653 tons.

These facts should afford encouragement to the merchants of Baltimore to persevere in well-directed efforts to retain and enlarge their distribution over a vast district to which she is allied by a happy natural affinity, a favored geographical propinquity, and from which she may obtain immense reciprocal advantages. It has been previously shown (we think, convincingly) that it is to these districts that we should ship directly, and not in the roundabout and expensive way we now reach them.

If Baltimore, by its present means of communicating with the Southern States, controls such a large percentage of the traffic certainly, with an unbroken all-rail connection the probability of securing a like proportion of the productions of that section, especially cotton, would be immeasurably enhanced.

It also appears, by statement page 89, that out of a total of 6,632,671 tons shipped from Baltimore there were conveyed by water, via Richmond, Norfolk, Wilmington, Charleston, Savannah, and other Southern ports, to be further conveyed by rail, 3,866,409 tons. Also, that if from the grand total of 6,632,671 tons shipped, there be deducted the export shipments from Baltimore of 787,375 tons, together with the tonnage of imports shipped west, by all rail, it would be shown that the 3,866,409 tons shipped to the Southern States, would represent from 60 to 70 per cent. of the entire shipments from Baltimore.

We have no figures at hand by which the tonnage of Baltimore can be compared with any other distributive point except Saint Louis, as follows:

	1880.	1881.	1882.	1883.
Saint Louis, shipments	3,793,205	4,346,937	.....	.....
Baltimore, shipments	5,376,850	5,670,671	5,835,567	6,632,671
Saint Louis, receipts	6,990,384	7,602,085	.....	.....
Baltimore, receipts	7,695,416	8,317,851	7,342,077	8,582,864

TRANSPORTATION VIEWED IN ITS CONNECTION WITH DISTRIBUTION.

The assertion that a city flourishes owing to its favorable position as a distributing center must be qualified by a knowledge of the extent to which she has availed herself of her opportunities of transportation, or has created for herself means of facilitating the interchange of the commodities in which she is enabled to deal.

If she possesses ample channels for intercourse, and avails of them solely for the purpose of disposing of what she acquires elsewhere she can only be designated as an agent in their distribution. But if by enterprise and energy she has been successful in supplying, either from her own manufacturing resources or from the manufactures she has acquired elsewhere, the necessities of the districts from which she obtains her supplies in a healthy interchange, she assumes the importance and occupies the enviable position of a successful principal.

Railroad speed annihilates space, and unequal relative distances are, by rules in railroad management, made to conform to the practice of trade, by which the more important patron enjoys the greater privileges; thus less influential intermediate districts are frequently not only handicapped by relatively higher rates of carriage, but passed with indifference, in submission to the exactions of the more distant and larger yielding emporiums. This is now so generally an accepted principle throughout the country as not to require special allusion in dealing with particular districts. Especially in attaching themselves to sea-board cities, manufacturing centers, and important points of original supply, do transportation companies avail of the system, even to the ignoring of situations of considerable importance, in the reach toward still more favorable position.

Actual distance, time, and even rates of carriage, are secondary considerations where masses of freight are sought and to be obtained.

THE LEADING DISTRIBUTIVE INTERESTS OF BALTIMORE, 1883.

Agricultural implements, agents, commission, and jobbers.

Number	23
Capital	$301,000
Sales	$1,450,000

New York, Pennsylvania, and Maryland furnish about one-half and the Western States one-half of these articles that find a market in Baltimore. The larger portion is distributed in the Southern States, while an export demand exists for South American and West Indian ports in the line of our foreign commerce. The natural affinity of the agriculturists in this State with those of the States further to the south constitutes a stronger link than exists in other branches of trade, so that no city east of the Ohio presents strong competition in this line of business.

(See article on agricultural implements under head of production, p. —.)

Boot and shoe dealers (jobbing).

Number of firms	34
Capital	$2,235,000
Employés	324
Wages	$259,200
Sales	$7,075,000

(1) This trade is healthy and increasing. About 65 per cent. of the supply is drawn from New England; 10 per cent. from New York and Pennsylvania, the remaining 25 per cent. being our own manufacture. The sales are made to Virginia and West Virginia, $2,250,000; North and South Carolina and Georgia, $1,920,800; Tennessee, Mississippi, and Alabama, $1,160,500; Maryland, $1,093,700, and Pennsylvania, $650,000.

(2) The jobbing boot and shoe business of Baltimore during the past ten years has grown more rapidly than in any other eastern city, and to-day Baltimore is acknowledged to be one of the largest, best, and closest markets in the country.

(See article on boots and shoes under head of production, page —.)

Butter and cheese (wholesale and commission).

Number	11
Capital	$488,000
Sales	$3,800,000

The receipts of butter and cheese for the year 1883, have been as follows:

	Butter.	Cheese.
	Pounds.	*Pounds.*
Baltimore and Ohio Railroad from Virginia, West Virginia, and the Western States	2,520,500	2,027,800
Northern Central Railroad from Maryland, Pennsylvania, and Western States	5,636,993	606,587
Baltimore and Potomac Railroad from Maryland and Virginia	277,452	1,139,881
Philadelphia, Wilmington and Baltimore Railroad from Maryland and Pennsylvania	4,388,847	4,368,882
Western Maryland Railroad, Maryland and Pennsylvania, estimates	4,500,000	300,000
Maryland Central Railroad from Maryland	45,000	.....
Steamers and sailing vessels, estimates	1,500,000	2,500,000
	18,868,792	10,943,150
The receipts of butter by country wagons at the open market, three times each week, may be roughly estimated at	1,000,000	.....
	19,868,792	10,943,150

The total receipts of butter for the year 1883, being estimated at from 15,000,000 to 16,000,000 pounds, there would be left for cheese the estimated weight of from 3,000,000 to 4,000,000 pounds.

As a market for butter and cheese, produced in the great pasture lands of the country, Baltimore fairly holds its position against New York. The latter city and Philadelphia purchased during the year 1883, as per shipments over the Philadelphia, Wilmington and Baltimore Railroad, 4,368,882 pounds.

Baltimore's proximity to Southern States is to her advantage in furnishing them annually with large supplies. Many establishments here, as elsewhere, put large quantities of the many imitations of butter on the market.

Exports for 1883 were 15,245 pounds against 17,112 pounds for the previous year.

The product of Maryland, Delaware, and Pennsylvania, furnishing excellent quality, commands good prices.

China, crockery, and queensware (wholesale dealers in).

Number	
Capital	$410,
Wages	$35,
Sales	$1,374,
Employés	

The supplies in this business are chiefly imported. If not the greater part certai the greater value is thus obtained.

American manufacturers, from every Northern and Eastern State, in their spec ties, with those of this city, contribute the homelier medium grades of ware.

Forty per cent. of the sales are made to Maryland, Delaware, Pennsylvania, and Virginias; 15 per cent. to Ohio and Pennsylvania; 35 per cent. to the Caroli Georgia, Tennessee, Alabama, and Missouri; the remaining 10 per cent. to the n distant States.

The imports for the year 1883 were valued at $413,030.

Cloth, cassimeres, vestings, and tailors' trimmings (importers and dealers).

Number firms	
Capital	$1,111
Sales	$3,585

This trade, of late years, has greatly changed, owing to consumption of dom woolens, and to change of taste in wearing apparel, the little use made of bl cloths, and the inroads upon the tailoring business, as a result of its extravagant tensions, by the growth of the ready-made clothing business, and the infreq demand made in consequence upon the general shopkeeper for woolen piece goo

Many of the smaller articles known as "findings" used in this business (forn of foreign production) such as sewing-silk, twists, &c., are now of domestic m facture.

Of the imported articles in this business the values are probably one-third dom and two-thirds foreign, the latter divided nearly equally between England, Fr and Germany.

The imports direct to Baltimore in cloths and cassimeres amounted, in 188 16,399 yards; value, $96,813. A large proportion comes through the port of New Y

The home trade tailoring business, greatly changed, now catering to the mor clusive consumers, has become fastidious, and contributes to the above busines supplies only about one-third; the remaining two-thirds relate to the trade west south.

Coffee (wholesale jobbing).

Number	
Capital	$1,17
Sales, bags	58
Value	$7,52

Distributions from Baltimore, through warehouse, &c., 287,887 bags; v $3,673,825. Distributed from New York, on Baltimore account, 300,000 bags; v $3,850,000. These shipments from New York by Baltimore dealers are to a ce extent estimated, but it is definitely ascertained that the operations of Baltimore bers, in that city, for the year reached within a fraction of 325,000 bags, of whic larger portion being shipped, the above figures, 300,000 bags, must be very n correct. This shows the volume of business in this article, transacted by our job and what can and will be the extent of operations in our own port when the m shall have resumed its normal condition.

Imports of coffee at Baltimore from Brazil for the past twenty years.

Years.	Bags.	Years.	Bags.	Years.	B
1854	200,829	1864	91,184	1874	3
1855	249,060	1865	86,725	1875	6
1856	197,989	1866	160,487	1876	4
1857	203,560	1867	266,926	1877	5
1858	188,019	1868	263,632	1878	4
1859	230,984	1869	333,842	1879	5
1860	181,292	1870	499,258	1880	4
1861	137,300	1871	566,995	1881	4
1862	77,775	1872	372,895	1882	4
1863	73,957	1873	376,803	1883	2

Imports of Rio coffee at all United States ports during four years.

	1879.	1880.	1881.	1882.	1883.
	Bags.	*Bags.*	*Bags.*	*Bags.*	*Bags.*
Baltimore	531,401	431,289	410,728	404,270	279,780
New York	1,722,361	1,277,549	1,649,826	1,933,617	2,119,922
New Orleans	212,668	199,916	261,630	186,666	202,679
Mobile	30,403	9,500	21,895	10,036	6,500
Savannah	22,160	17,844	23,273	28,175	35,472
Charleston	.....	.....	1,780	840	.....
Galveston	32,913	14,500	48,300	61,752	62,400
Richmond	7,100	.....	33,500	14,500	12,708
Total	2,559,006	1,950,598	2,450,932	2,639,856	2,719,461

Stocks of coffee on hand at all United States ports 1st of January for six years.

	1878.	1879.	1880.	1881.	1882.	1883.
	Bags.	*Bags.*	*Bags.*	*Bags.*	*Bags.*	*Bags.*
Baltimore	44,992	48,771	33,333	44,528	23,744	17,136
New York	74,613	247,541	95,429	111,788	75,097	303,436
Galveston	15,000	5,460	4,000	17,000	19,000	13,000
New Orleans	25,900	28,387	21,071	33,604	25,090	29,392
Mobile	4,500	4,800	3,000	4,700	.....	.....
Savannah	.....	2,000	2,000	6,000	2,000	3,000
Richmond	3,700	3,600	.....	.....	4,000	4,000
Hampton Roads to order	.....	.....	.....	5,738	.....	.....
Total	168,705	340,499	158,833	223,358	148,931	369,964

Average monthly receipts and sales of Rio coffee at Baltimore for the past fourteen years.

	Received.			Received.	Sold.
1870	41,605	42,213	1877	42,529	39,678
1871	47,282	45,705	1878	40,098	40,911
1872	31,077	32,922	1879	44,228	42,667
1873	31,366	30,137	1880	35,940	37,228
1874	32,602	33,245	1881	34,227	33,296
1875	55,850	52,458	1882	33,689	35,421
1876	39,269	43,511	1883	22,558	23,740

Vessels employed in the coffee trade of Baltimore.

Name of vessel.	Capacity.	Name of vessel.	Capacity.
	Bags.		*Bags.*
Bark Adelaide	8,000	Bark Gamabel	14,000
Bark Amazon	5,000	Bark New Light	9,500
Bark Albermarle	9,000	Bark Serém	12,500
Bark Aquidneck	7,500	Bark Spotless	8,000
Bark Addie J. Bonner	12,000	Bark Templar	8,000
Bark Campanero	6,000	Bark Winifred	6,000
Brig Chowna	4,800	Bark Yamoysen	9,600
Bark Dom Pedro II	11,000	Bark Water Witch	4,500
Ship David Stewart	16,500		
Bark Grey Eagle	8,500	Total	160,400

The above vessels are all good sailers and capable of making from three to four round voyages between Baltimore and Rio de Janeiro during the year, besides which there are three new vessels building for this trade of a capacity of some 16 000 bags each, which will be completed in time for the coming crop.

The cargoes brought to this port were chiefly by the Baltimore clipper vessels, of which there are eighteen.

However sound the policy that defeated in Congress subsidies to American steamers, importers of coffee to this port regret the loss of a monthly line of steamers from the Brazils, the promise of which, it is believed, was a contingency of the scheme. The gains in importation of coffee at New York were owing, only in part, to the establishment of a direct line of steamers from the Brazils to that port; these were, for 1881, 372,000, and for 1882, 284,000 bags; a gain over 1881 of 656,000 bags; the gain alone for 1882 exceeding the total amount imported at this port during the year 1883. This unfavorable comparison is believed to be but temporary. The individual interests in the coffee-sailing fleet, though very considerable, will not interfere with such a combination as shall bring about the establishment of a steam line and a return of the trade to its former prosperity. The revolution effected by steam carriage has had little influence on the decrease in importation of this article at this port for the year 1883, and by no means threatens the life of the business. During the latter part of 1882 and early months of 1883 the price of Rio coffee was lower than for thirty years or more. Stocks in New York accumulated largely as a speculation; the price advanced by degrees steadily throughout the year, and the anomaly was presented of our dealers supplying their wants from that market at a figure ranging from one-fourth to three-fourths of a cent per pound below the current value in Rio. During the year from this cause our jobbers shipped from New York nearly 300,000 bags. This condition could not long continue. Already a change has been effected. Large cargoes are now on the way to this port, and during the next thirty days the receipts will probably reach 75,000 bags.

There are now building three sailing vessels for this trade, and it is possible the sentiment has somewhat changed in favor of this mode of conveyance, inasmuch as the vessel in the length of homeward voyage affords to the owner of the cargo free storage with ample opportunity of placing the same on the market to advantage.

Carriages and wagons (wholesale dealers and repositories of).

Number	18
Capital	$225,000
Sales	$650,000

The supply is chiefly from home manufactories. New York, New England, and Ohio supply probably 25 per cent.

As with the builders the distribution is chiefly at home, a small percentage over 15 per cent. being for Virginia, the Carolinas, and Tennessee.

Coal (wholesale dealers and miners).

Number	32
Capital	$5,301,000
Total sales	$8,638,863

Source of supply for nine years, 1875 to 1883 (tons of 2,240 pounds).

Year.	Cumberland.				Anthracite.		
	Baltimore and Ohio Railroad.	Northern Central Railroad.	Western Maryland Railroad.	Total.	Northern Central Railroad.	Philadelphia, Wilmington and Baltimore Railroad, and water.	Total.
1883	1,510,560	191,827	12,029	1,714,416	440,092	253,402	693,494
1882	1,503,988	134,895	3,190	1,642,073	331,545	196,233	527,778
1881	1,361,856	100,681	.....	1,462,537	358,043	164,933	522,976
1880	1,477,403	66,294	.....	1,543,697	260,465	74,891	335,356
1879	1,015,197	62,454	.....	1,077,651	294,337	117,832	412,169
1878	951,907	70,534	.....	1,022,441	216,017	94,025	310,042
1877	895,619	83,343	.....	978,962	234,590	119,346	343,936
1876	1,004,232	46,646	.....	1,050,878	211,385	52,569	263,954
1875	1,286,479	23,146	.....	1,309,625	207,935	69,859	277,794

By the above table an increase in the receipts of coal at the port of Baltimore during the seven years last past is shown as follows:

	1876.	1883.	Increase.
			Per cent.
Bituminous	1,050,878	1,714,416	63
Anthracite	263,954	693,494	162

Of anthracite, there were shipped from Baltimore by the various rail lines, during the year 1883, 140,924 tons; leaving, for home consumption, 350,091 tons; of this a small portion was probably shipped by water to southern ports. Of bituminous, 111,000 tons were consumed in Baltimore during the same year, the remainder, 1,602,763 tons, were shipped to New York, New England, ports in the South, and to San Francisco, leaving about 63,256 tons for foreign export, valued at $153,897.

The coal mines of Maryland and West Virginia are largely owned and operated by Baltimore firms, and this is one of the most growing and important of the city's interests. The product of the Cumberland mines for the year 1883 equaled 3,000,000 tons, of which there were 700,000 tons carried by the Chesapeake and Ohio Canal to the District of Columbia, 1,714,416 tons brought by the Baltimore and Ohio Railroad, and 191,827 tons by the Pennsylvania Railroad, to this city; the remainder being shipped direct from the mines by the Pennsylvania Railroad to eastern ports.

This yield exceeded that of the previous year, 1882, by nearly 1,000,000 tons, owing to a strike among the miners which continued during nearly six months of that year.

Cotton.

Number of bales sold in Baltimore	65,060
Number of bales received by spinners direct from the South	18,044
Number of bales exported	247,033
	330,137
Value, averaged at $54 per bale	$17,827,398

This was handled by about twenty dealers and shippers, mainly on commission. Although a large part of that represented by exports was effected by Baltimore firms, much of it was actually through shipment; it, however, of necessity comes under the head of exports, being strictly accounted for at the customs, and therefore properly included in any such statement.

Statement of product of cotton in the United States, Baltimore's gross receipts, and percentag[e] of same; amount exported from United States, Baltimore's proportion of same; home consumption, with Baltimore's percentage from 1872 *to* 1883.

Years.	Total crop.	Baltimore's gross receipts.	Baltimore's percentage.	Exports, Great Britain and continent.	Exports from Baltimore.	Consumed in United States.	Consumed by Baltimore manufacturers.	Baltimore's percentage.
	Bales.	*Bales.*		*Bales.*	*Bales.*	*Bales.*	*Bales.*	
1872–'73	3,931,000	107,367	2¾	2,676,000	20,943	1,201,000	51,131	4¼
1873–'74	4,170,000	113,157	2¾	2,811,000	41,528	1,320,000	56,240	4¼
1874–'75	3,828,000	120,533	3⅛	2,674,000	44,567	1,201,000	57,970	4⅝
1875–'76	4,632,000	116,435	2½	3,232,000	29,114	1,354,000	57,263	4¼
1876–'77	4,474,000	126,388	2⅝	3,028,000	32,316	1,422,000	58,382	4⅛
1877–'78	4,774,000	142,135	3	3,356,000	58,367	1,402,000	64,321	4½
1878–'79	5,074,000	173,252	3⅜	3,466,000	95,203	1,573,000	66,284	4⅛
1879–'80	5,761,000	249,981	4⅓	3,864,000	122,073	1,797,000	76,642	4¼
1880–'81	6,606,000	251,699	3⅞	4,565,000	151,911	1,943,000	80,532	4⅛
1881–'82	5,456,000	266,639	4⅞	3,551,000	155,752	1,964,000	82,973	4¼
1882–'83	6,949,000	333,558	4¾	4,766,000	247,033	2,061,000	83,104	4

These tables show the following percentage of Baltimore's gain in the ten years:

	Per cent.
Receipts	210
Exports	1,079
Home consumption	62

And beyond question, with proper connection with the South, as heretofore indicated, the cotton receipts at this port would aggregate from 700,000 to 800,000 bales per annum; in proof of which may be cited the fact that, of the foreign shipments from this port there were received by the Bay Line in 1881–'82, 35,000 out of 59,000, and in 1882–'83, 57,000 out of 96,000 bales from Norfolk, which is significant. The fact that during the year 1882–'83 there were shipped from Southern ports, Norfolk, Charleston, and Savannah, to Baltimore 100,000 bales cotton on through bills lading, would also tend to confirm this statement. The storage and compressing facilities of this port are excellent, while foreign shippers have the advantage of cheaper ocean freights as compared with more southern ports, southern shippers have the advantage in the higher price that cotton always commands here as against Norfolk, Savannah, and Charleston.

Official statistics show that the value a bale of cotton, during any season, is from $1 to $1.50 more in Baltimore than in Norfolk. Thus, had Baltimore secured for herself proper transportation facilites from the South, by which cotton would have been brought from Memphis, Meridian, Selma, Atlanta, Augusta, Charlotte, and the intermediate points, the cotton diverted from us would have assisted to make this the great point of export for the article on the Atlantic coast. Lacking this facility serious injury will in time result not only to the cotton interests of this city, but to other branches of our interstate commerce.

In the foregoing tables there may be noticed slight discrepancies between the totals and those of the total receipts at port of Baltimore, given on folio (which are believed to be as nearly correct as possible), whilst these discrepancies may be accounted for by the fact that the water lines close their reports on August 31, the end of the cotton year, and the rail lines close theirs on December 31 each year.

The 333,558 bales cotton received in Baltimore during 1882–'83 were brought by the following lines and from the territory named:

	Bales.
Baltimore Steam Packet Company (Bay Line) furnished by Norfolk 60 per cent.; North Carolina, 25 per cent.; South Carolina, 15 per cent	96,724
York River, furnished by North Carolina, 15 per cent.; South Carolina, 55 per cent.; Georgia, 30 per cent	26,618
Charleston, furnished by South Carolina, 70 per cent.; Georgia, 30 per cent	24,970
Savannah, furnished by South Carolina, 15 per cent.; Georgia, 60 per cent. Alabama, 10 per cent.; Mississippi, 10 per cent.; Tennessee, 5 per cent	95,345
Baltimore and Ohio Railroad, furnished by Cincinnati, 65 per cent.; Saint Louis, 35 per cent. (of that from Cincinnati, Alabama furnishes 35 per cent.; Kentucky, 20 per cent.; Georgia, 12 per cent.; Mississippi, 18 per cent.; Tennessee, 15 per cent.)	62,262
Northern Central Railroad, furnished by Cincinnati, 75 per cent.; Saint Louis, 25 per cent	790
New Berne, Washington, and Edenton (N. C.), all from North Carolina	11,167
Roanoke River Transportation Company, points on Roanoke River and other points on Eastern North Carolina	7,045
Western Maryland Railroad, furnished by Alabama, Mississippi, and Tennessee	5,350
Baltimore and Potomac Railroad	1,008
	331,279
From other ports	2,279
	333,558

ipts for eleven years at port of Baltimore, showing source of supply and means of transportation.

	1872–'73.	1873–'74.	1874–'75.	1875–'76.	1876–'77.	1877–'78.	1878–'79.	1879–'80.	1880–'81.	1881–'82.	1882–'83.
nd Ohio	*Bales.*	*Bales.*	*Bales.*	*Bales.*	*Bales.*	*Bales.*	*Bales.*	*Bales.*	*Bales.*	*Bales.*	*Bales.*
Central	.....	.....	.....	.....	.....	.....	.....	38, 218	35, 508	67, 508	62, 262
aryland	.....	.....	.....	.....	.....	.....	.....	6, 418	7, 790	4, 315	790
nd Poto-	26, 168	26, 976	14, 287	12, 952	7, 871	13, 563	37, 731	.....	.....	.....	5, 350
Wash-	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 008
d Eden- River tation	3, 216	3, 854	6, 575	8, 707	4, 906	8, 532	7, 341	7, 361	12, 088	9, 444	11, 167
North and sec- nty con-	2, 975	5, 894	2, 467	3, 786	1, 422	3, 112	3, 161	3, 682	7, 210	7, 565	7, 045
Steam ompany e), from North South Tennes- ia, Ala- Missis-	7, 959	7, 512	8, 064	8, 888	8, 275	6, 936	2, 667	.....	.....	.....	.....
Chesa- d Rich- eamboat York e, from North South a, and	41, 400	47, 039	54, 239	50, 144	54, 270	42, 170	40, 941	72, 477	73, 091	59, 751	96, 734
nd Min- m s h i p Savan- overing Carolina, nd Ala- itory.... nd Min- mship from a, cover- Carolina, rolina, ia ..... S. C .... rts.....	2, 425	5, 163	8, 992	7, 770	4, 441	3, 959	11, 865	24, 824	17, 878	26, 269	26, 618
	15, 609	16, 693	21, 038	18, 871	24, 666	44, 487	47, 180	76, 893	70, 968	70, 316	95, 345
	7, 991	8, 432	11, 459	11, 138	14, 463	19, 523	20, 820	19, 400	23, 972	20, 915	24, 970
	.....	.....	2, 457	.....	5, 059	618	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	205	1, 009	3, 184	556	2, 279
.....	107, 743	121, 563	129, 578	122, 256	125, 373	142, 850	171, 911	250, 282	251, 799	266, 639	333, 558

nts of exports of cotton from ports in the United States, in thousands of bales.

Ports.	1877–'78.	1878–'79.	1879–'80.	1880–'81.	1881–'82.	1882–'83.
.....	225	354	302	480	262	521
s.....	1, 453	1, 244	1, 442	1, 636	1, 170	1, 603
.....	164	123	112	116	46	45
.....	351	462	424	508	339	418
.....	297	376	316	442	303	369
.....	56	65	37	70	64	57
.....	159	203	257	329	332	372
.....	58	95	122	151	155	246
.....	419	376	650	583	628	774
.....	123	123	132	135	159	186
.....	26	25	41	68	82	82
.....	24	22	30	40	18	43

From this statement it appears that from 1877–'78 to 1882–'83, by the following list of percentages of increase and decrease of exports, Baltimore, as regards increase, ranks first:

Increase.

	Per cent.
Baltimore	324
Philadelphia	215
Norfolk	134
Galveston	123
New York	85

Decrease.

	Per cent.
Boston	
Charleston	
Savannah	
New Orleans	
Mobile	

Statement showing direction of export movement of cotton from the port of Baltimore from 1872 to 1882.

	Liverpool.	Bremen.	Holland.	Barcelona.	Halifax.	Havre.	Amsterdam.	Rotterdam.	Total.
1872–'73	10,555	7,161	1,624	1,603					20,943
1873–'74	20,453	16,602				65	499	3,909	41,528
1874–'75	22,713	17,054	3,403		1,397				44,567
1875–'76	14,737	11,534	742	481	1,620				29,114
1876–'77	17,981	12,230	1,578	14	513				32,316
1877–'78	30,075	26,023	1,959			310			58,367
1878–'79	76,728	17,879				596			95,203
1879–'80	94,426	27,647							122,073
1880–'81	123,551	28,035				325			151,911
1881–'82	98,918	54,806	1,059			969			155,752
1882–'83	180,223	59,284	2,703			4,823			247,033

Cooperage stores.

Number	52
Capital	$230,950
Hands	380
Wages	$149,830
Material	$345,432
Proceeds	$650,850

The cooperage trade has not materially increased since 1880. The pork, whisky, sirup, oil, and beef barrels used in this and neighboring cities are made here, of materials from Pennsylvania, Virginia, and West Virginia. Flour and sugar barrels, of materials from Wisconsin, Minnesota, Michigan, and Ohio, are consumed principally by the mills and refineries in this vicinity. Barrels, in considerable quantities, are sent to southern ports, for the shipment of turpentine. Cooperage to the West Indies and South American ports is exported hence. Exports in shooks, staves, and headings amounted in 1883 to $261,299, and in hogsheads and barrels, empty, to $13,444.

Dry goods (wholesale and commission).

Number firms	53
Capital	$6,305,000
Hands	923
Wages	$630,838
Sales	$22,725,000
Wholesale	$16,725,000
Commission	$6,000,000

Notions, fancy goods, and toys (wholesale).

Number firms	39
Capital	$2,254,000
Hands	620
Wages	$420,558
Sales	$7,840,000
Total sales	$30,565,000

The dry-goods trade occupies a substantial position. The reputation for integrity that has ever distinguished the seniors in the business may be claimed for the juniors who are coming to the front The present mode of operating tends to sharpen the business intellect, and they to whom the burden is being transmitted keenly appreciate the situation. The commission agent now disposes of the product of the Southern looms, in addition to the yield of the looms of New England and of the Middle States, and, in addition, the woolen manufactures of California. The sphere of distribution embraces New York, Philadelphia, Pittsburgh, Chicago, Saint Louis, Cincinnati, Louisville, Milwaukee, Nashville, Memphis, New Orleans, Little Rock, Kansas City, Omaha, Denver, and San Francisco, the sales amounting, in the aggregate, to a value of about $6,000,000. The greater portion ($16,000,000 of the total) pertains to the jobbing trade, and so closely related are jobbing (piece) goods to the thousand and one articles familiarly classified as "notions," which claim a considerable share, that it is necessary to include the notion and fancy goods table as one family.

As sources of supply we are indebted to our own country, England, Ireland, Scotland, France, Germany, Switzerland, &c., individually somewhat, as follows:

England.—Needles, white goods, of delicate texture, such as mull, tarleton, book, India, and Bishop lawns; dress goods of cashmere, merino, wool, alpaca, worsted, and silk, with all their varieties of mixture and quality; laces of medium grade and curtain goods, including all the species that terminate only in toilet mats, classified as "Nottingham."

Ireland.—Linens and linen handkerchiefs, from dowlas to linen cambric.

Scotland.—House-keeping linens, from covers, napkins, towels, through all qualities, to the homely crash.

France.—Fine and fancy goods of every conceivable description, some of which are only appreciated from their distinguished nomenclature.

Germany.—Gloves and hosiery, known as "Berlin," cashmere and Saxony goods; and an endless variety of toys and toy-shaped utensils for the nursery, boudoir and sewing-room.

Switzerland.—Edgings, insertings, laces, embroideries, generally classed as Hamburg goods, worked by the loom with more of the hand touch than is possible in our valuation of time to the weaver adding a finish to the work, which is denied to our looms, until the utmost perfection has been attained by the inventor.

The foregoing amount to about 7 per cent. of the sales. The remainder of the supply may be said to be from domestic sources of the following parentage:

Maryland furnishes heavy brown sheetings, plaids, kerseys, Osnaburgs, tickings, and ducks, besides finished shirts, overalls (the latter claiming almost a monopoly in supplying the West), and large quantities of ladies' cloaks, the somewhat renowned Hagerstown gloves, &c., *the total amounting to about* 18 *per cent.*

Virginia, South Carolina, and Georgia furnish plaids, tickings, and Osnaburgs, also heavy brown sheetings—the latter to a certain extent relinquished to them by the northern manufacturers—*equal to* 4 *per cent.*

The New England States furnish nearly all the printed calicoes, flannels, blankets, and bleached goods, comprised in drills, shirtings, and sheetings of fairer texture, and often of the greatest width required for household use—the character of these goods has changed since the introduction of cotton manufacture in the South. From this quarter also come more deli ate and sheerer fabrics, classed with white goods, which have nearly superseded British make. Also, cotton, cotton and wool, and woolen shawls up to medium grades; cassimeres in considerable quantities of medium and fine grades. *Receipts from these quarters equal about* 37 *per cent. of the trade* in this branch.

New York and Philadelphia furnish dress goods of fine appearance and mixed nature, and at moderate price, under such names as indicate little more than the necessity for change of name with each season. Cassimeres of many grades, also manufactured articles of female apparel, the famous Gloverville castor gloves, underwear for both sexes, in unlimited variety of material, color, and grade, shirts, collars, cuffs, neckties, and handkerchiefs—*equal to* 19 *per cent.*

New Jersey and Connecticut furnish buttons, silks, traveling satchels, oil-cloths, spool cotton, corsets, pins, clocks, brass goods, and cheap jewelry—*equal* 15 *per cent.*

Woolen shawls within a few years have come in considerable quantities from Illinois, and the finest of blankets from California.

Of jobbing dry-goods and notions, on a basis of $16,725,000, for the first and $7,840,000 for the second, or a total of $24,565,000, the distribution is somewhat as follows:

State.	Amount.	Per cent.	State.	Amount.	Per cent.
Maryland	$2,456,500	10	South Carolina	$2,210,850	9
West Virginia	4,421,700	18	Alabama	736,950	3
North Carolina	3,439,100	14	Texas	736,950	3
Georgia	982,600	4	Pennsylvania	1,228,250	5
Arkansas	368,475	1½	Ohio	491,300	2
Delaware	736,950	3	Tennessee	1,228,250	5
Virginia	4,913,000	20	Mississippi	614,125	2½

Fish, cured and salted.

Number salt	7
Capital	$125,000
Sales	$475,565

Imports of foreign and receipts of domestic fish from New England for the year 1883, *as compared with those of the last ten years.*

	Mackerel.	Herring.
	Pounds.	*Pounds.*
British provinces, 1883		1,405
New England, 1883	20,012	13,684
Total 1883	20,012	15,089
1882	25,772	20,055
1881	28,891	21,065
1880	26,940	18,000
1879	12,237	22,030
1878	13,515	23,356
1877	15,696	20,916
1876	21,038	36,473
1875	27,485	14,858
1874	17,172	22,444

Shipments of salt fish are made to near by Southern and throughout the Western States.

Flour dealers, wholesale and commission.

Number	34
Capital	$1,280,000
Hands	176
Wages	$105,000
Sales	$4,616,000

Of the 763,657 barrels flour handled during 1883, the greater part was received from Ohio, Illinois, Indiana, Iowa, Missouri, and Minnesota, leaving about 150,000 barrels to be supplied by mills in Maryland, Pennsylvania, and Virginia. The great favor obtained by the so-called "new process," first applied extensively by the Western millers, has compelled our mills to adopt the same mode of manufacture.

(See article on millers, page 235, under head of Production.)

Receipts of flour and corn meal, at Baltimore, with the sources of supply, for five years, 1879 *to* 1883, *inclusive.*

	1879.	1880.	1881.	1882.	1883.
City mills ..... barrels	411,316	456,568	407,878	459,505	473,647
By rail ..... do	863,341	716,202	764,786	733,880	667,101
Locust Point ..... do	171,749	146,211	162,456	147,626	78,934
Steamers ..... do	54,575	59,606	31,618	33,899	17,682
Total flour ..... do	1,500,981	1,378,587	1,366,738	1,374,890	1,237,364
Corn meal ..... do	5,124	2,690	3,077	460	1,378
Flour ..... sacks	56,623	80,136	61,565	.....	.....

ith the exception of the year 1880, the reports of the corn and flour exchange do orrespond as to total receipts of flour with the above as in those reports, the re- s at Locust Point have been omitted.

Exports of flour from Baltimore for six years, 1878 to 1883, inclusive.

	1878.	1879.	1880.	1881.	1882.	1883.
	Barrels.	*Barrels.*	*Barrels.*	*Barrels.*	*Barrels.*	*Barrels.*
Britain	100,353	92,219	141,105	88,631	101,573	.....
n	1,118	273	1	119	13,643	.....
d	200	2	1,904	7,481	2,934	.....
	363,796	252,553	240,409	240,401	288,702	441,477
North American colonies	1,905	3,516	1,994	983	4,291	.....
ndies	115,070	96,406	80,109	75,693	50,297	.....
ports	7,768	3,330	1,361	500	4,071	.....

total quantity of flour handled during 1883 may be calculated at 1,237,304 s, being the product of city mills and receipts from the West and by water. tribution: Home consumption, from 575,000 to 580,000 barrels; exported, 7—210,000 barrels of which went to South America, chiefly to Brazil. The re- ng 231,477 exported went to England and Holland, which represented an in- in that direction over previous years; 216,304 barrels were taken up by Mary- Virginia, and the Carolinas.

Groceries, tea, spices, and coffee roasters, (jobbers).

	No.	Capital.	Hands.	Wages.	Sales.
es, general stock	47	$3,863,465	465	$325,500	$16,198,000
clusively)	12	394,000	.....	.....	1,065,740
specialties	4	250,000	.....	.....	2,150,000
oasters and tea	10	668,000	.....	.....	2,895,675
					22,309,415
s:					
ar	....	410,942	.....	.....	.....
asses	....	255,645	.....	.....	666,587
otal	...	.....	.....	.....	22,976,002

le from the articles of tea and coffee, the supply of our own equals 50 per cent. ting of flour, sugar and molasses, canned goods, spices, and soap.

Eastern markets furnish soap, candles, starch, cheese, spices, refined sugar— 00 to 1,000 barrels daily (amounting to $5,000,000annually)—and soda, molas- d sirups, equal to 30 per cent.

West furnishes soap, candles, starch, and New Orleans sends us molasses. The s of spices of all kinds amounted, in 1883, to 18,396 pounds, value $3,584.

important article—sugar—has been surrendered to other markets temporarily, at the facilities possessed by this city for the prosecution of this branch of busi- ould be finally relinquished, is beyond comprehension; consequently, the effort ver it is only to be presumed as postponed. A large portion of the imports of ate and sal sodas, amounting in 1883 to 14,200 tons, was distributed by this

ibution.—Maryland, Delaware, Virginia, and West Virginia take 50 per cent.; stern part of Pennsylvania, the Carolinas, Georgia, Tennessee, Alabama, and ippi take 35 per cent.; Eastern Ohio takes 15 per cent.; New York having be- n important coffee market, our merchants frequently find bargains there, of store, with expenses covered to a certain time, which limit permits of that city used as a depot, shipments being made thence. These sales, on Baltimore ac- as well as those effected there, are to all the Western and Southwestern States rritories.

character of the dealings in tea here, hitherto confined to the supply of local ption, has somewhat changed, in that the States of Maryland, Virginia, Penn- ia, West Virginia, the Carolinas, Kentucky, Tennessee, Ohio, Georgia, Alabama, ississippi are now enabled to obtain supplies from Baltimore dealers, notwith- ng that no tea comes to this port directly, all being received at New York by via the Suez Canal route.

hong tea, a favorite chiefly with English consumers, is obtained in small quan- om London, and is known here as English breakfast tea.

e total amount of the article consumed in the United States, amounting to

75,000,000 of pounds annually, valued at $20,000,000, Baltimore takes about 2,175,000 pounds, of the value of $1,015,000.

These purchases are made for cash, but, when sold in considerable quantities, are usually on four months' credit.

Imports of sugar and molasses.

Years.	Sugar.	Molasses.	Years.	Sugar.	Molasses.
1868	$5,333,224	$814,153	1876	$3,139,355	$638,886
1869	7,019,905	717,802	1877	5,459,803	714,980
1870	7,783,457	782,566	1878	2,864,193	593,452
1871	9,504,261	671,352	1879	843,312	669,673
1872	12,088,416	666,604	1880	616,761	486,825
1873	11,380,160	585,577	1881	811,689	269,528
1874	9,697,735	1,688,932	1882	822,224	385,129
1875	7,825,556	2,156,022	1883	410,942	255,645

A problem for several years has been how to recover a trade and an industry long a pride and profit to Baltimore, now extinct—that of sugar and its refining.

There were fleets, warehouses, refineries, all things of the past. Meanwhile there have grown to enormous proportions similar establishments in other cities to which all the advantages of this industry have been transferred, and are by them being enjoyed to the discomfiture of those sections that do not possess the facilities, extraordinary or otherwise, of a manipulation that precedes the mechanical manipulation, and secures to the refiners more than the advantages usually compassed in operations of the largest scope, when controlled simply by capital, skill, and a fair field.

Thus, notwithstanding cheap living, ample facilities, cheap coal, free water, capital seeking profitable employment, and a daily distribution of 800 barrels of refined sugar, drawn from the Eastern points at a cost of three-eighths of a cents per pound, we are deprived of all the benefits formerly enjoyed by traffic in this article.

It cannot be said that this industry was allowed to die out without any effort to sustain it.

The failure of the Calvert Refinery occurred in 1873. In 1876 a call upon the business men was responded to, and this magnificent property, by large expenditure, was equipped with the most improved machinery, and once more put in thorough working condition.

Notwithstanding some weak points in the management, which might appear to have been easy to remedy, the ample means, enterprise, and intelligence of those directly interested were considered to be a guarantee of success, yet the year 1877 completely dissipated these expectations, and the refining interests were suddenly brought to a close.

If the sagacity of some of the shrewdest men in a community is thus utterly defeated by means hinted at in the foregoing, or by unjust discriminations in the matter of levying customs, there can be little hope until these intimations are verified, and when beyond doubt commissions shall succeed in purging these offices of their unworthy incumbents.

This or any community need not fear legitimate competition. All reason asserts the contrary.

Grain, flour, bread, breadstuffs, and hay.

Number of grain shippers and receivers on commission	73
Value of bread and breadstuffs exported	$32,222,221

Home consumption.

Articles.	Quantity.	Value.
	Bushels.	
Wheat, milled	2,134,000	$2,344,160
Corn	1,767,391	1,060,434
Oats	1,168,424	522,906
Rye	119,952	78,168
Barley	309,399	247,519
Peas	25,000	31,250
Beans	60,000	150,000
Hay and straw, estimated	16,536	206,700
Total		36,863,298

Statement showing total quantity of grain and flour received at the following ports from 1875 *to* 1883.

Year.	Montreal.	Portland.	Boston.	New York.	Philadelphia.	Baltimore.	New Orleans.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*
1875	17, 134, 177	4, 836, 634	18, 321, 063	93, 895, 082	22, 452, 400	22, 048, 569	9, 669, 296
1876	18, 813, 710	4, 000, 181	22, 753, 698	95, 949, 242	36, 310, 565	35, 185, 276	9, 545, 194
1877	18, 358, 134	2, 738, 215	23, 215, 457	103, 313, 782	25, 420, 545	35, 346, 470	10, 025, 381
1878	20, 872, 220	4, 925, 037	27, 291, 781	152, 853, 306	45, 474, 650	47, 075, 240	14, 529, 304
1879	22, 363, 324	2, 381, 504	32, 500, 829	162, 269, 915	47, 398, 455	66, 799, 926	14, 895, 836
1880	25, 527, 842	3, 440, 241	37, 091, 004	164, 942, 425	49, 102, 688	60, 920, 813	22, 992, 544
1881	20, 358, 626	1, 987, 054	32, 211, 018	140, 122, 442	28, 667, 640	43, 581, 518	22, 426, 777
1882	16, 249, 877	5, 793, 771	29, 621, 929	114, 405, 382	20, 540, 110	28, 375, 249	13, 632, 411
1883	18, 423, 981	7, 264, 303	35, 047. 175	124, 336, 235	23, 554, 840	36, 068, 611	22, 918, 510

Of the total receipts at the ports mentioned for the year 1883 the percentages are as follows: New York, 46; Baltimore, 13¼; Boston, 13; Philadelphia, 9; Montreal, 7; New Orleans, 8½; Portland, 3. Increased receipts for the year 1883 over 1882 were: New York, 9,930,853; Philadelphia, 3,014,730; Baltimore, 7,693,362; Boston, 5,425,246; Montreal, 2,174,104; New Orleans, 9,286,099, and Portland, 1,470,532 bushels.

Grain and flour receipts at Baltimore are made up according to sources of supply, as follows:

	1880.		1882.		1883.	
Western States, or through trunk lines.	*Bushels.*	*Per cent.*	*Bushels.*	*Per cent.*	*Bushels.*	*Per cent.*
Baltimore and Ohio Railroad	27, 651, 927	85	12, 562, 397	90	14, 501, 334	83
Pennsylvania and Northern Central Railroads	24, 126, 469		13, 059, 860		15, 409, 500	
Local.						
Western Maryland Railroad; Baltimore and Potomac Railroad; Philadelphia, Wilmington and Baltimore Railroad; Maryland Central Railroad	9, 142, 417	15	2, 752, 992	10	6, 157, 777	17
Total	60, 920, 813		28, 375, 249		36, 068, 611	

Statement of exports of flour and grain from the following ports from 1878 *to* 1883, *inclusive.*

Ports.	1878.	1879.	1880.	1881.	1882.	1883.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*
Baltimore	39, 702, 633	55, 848, 889	50, 987, 711	34, 317, 615	21, 445, 991	27, 467, 611
Philadelphia	29, 748, 349	32, 411, 382	31, 697, 604	16, 322, 605	7, 623, 698	11, 792, 565
New York	107, 819, 044	126, 279, 637	136, 956, 705	91, 881, 506	64, 615, 271	69, 031, 307
Boston	13, 209, 424	16, 064, 987	19, 621, 231	15, 799, 773	10, 426, 112	13, 595, 104
Portland	2, 291, 471	2, 433, 686	3, 381, 752	1, 274, 958	174, 553	727, 078
Montreal	19, 705, 943	22, 240, 228	23, 944, 080	17, 782, 054	14, 249, 685	15, 499, 282

Ocean freights from Baltimore for the year 1883.

Months.	Grain per bushel to Liverpool.	Grain per quarter to Cork for orders.		Grain per q	
				To direct E. C. Ireland.	T t
	Steam.	Sail.	Steam.	Sail.	
	d.	s. d.	s. d.	s. d.	
January	7	5 10	.....	5 8	
February	7	5 6½	.....	5 5½	
March	5½	5 0½	.....	4 9	
April	3½	3 9½	.....	3 7½	
May	2½	3 10½	.....	3 5½	
June	3½	4 3	4 1	4 0½	
July	4½	4 4½	4 1½	4 0½	..
August	5½	5 0½	4 11½	4 8½	..
September	4½	4 11½	4 10	4 3½	..
October	5½	5 2½	4 8½	4 10½	..
November	6	5 0½	4 9½	4 8½	..
December	5½	4 7½	4 5½	4 5½	..

It will be observed from the above statement that the Western States furn through the trunk lines, in 1880, 85 per cent.; in 1882, 90 per cent., and in 1 per cent. of this total; while for 1880, 15 per cent.; in 1882, 10 per cent., and i 17 per cent., is furnished by territory peculiarly tributary to Baltimore, such as land, Delaware, Pennsylvania, and Virginia.

Of the entire traffic (breadstuffs) of the Baltimore and Ohio Railroad 50 per derived from the middle tier of States, embracing Virginia, Ohio, Indiana, I and Kentucky, outside of Chicago, Peoria, Saint Louis, Indianapolis, and Cinc from which cities only 20 per cent. is derived; 25 per cent. from the smaller c tive terminal points; only 5 per cent. is received from States west of the Mis River, while 90 per cent. is drawn from districts east of the Mississippi Ri south of Chicago, including that city.

Of the traffic (breadstuffs) of the Pennsylvania Railroad, with its system of c ing roads owned and controlled by it, 50 per cent. is drawn from local points a lines, in Illinois, Ohio, Indiana, Michigan, Wisconsin, and Iowa; 25 per cent. fr cago, Peoria, Saint Louis, Louisville, Indianapolis, and Cincinnati, competitive the remaining 25 per cent. from the smaller competitive and terminal points.

The reduction in receipts of grain at this port in the years 1881 and 1882 is to a partial failure of crops in some of the Western States, where bad weather a loss in wheat and corn of over 500,000,000 bushels, which in turn correspor diminished the exports.

Of this loss in exports, Baltimore suffered less than either Philadelphia York; thus the surplus carried over to 1882 was small.

Fine crops in Europe and large receipts from India materially diminished shipments, our markets ruling high.

In the year 1883 the wheat crop having fallen short of that of 1882, by near 000,000 bushels, this loss was compensated by an increase in the corn crop; so t aggregate of both receipts and exports shows a gain over the year 1882.

In comparing the receipts, a gain for Baltimore of 5,440,000 bushels is th over the combined gains of New York and Philadelphia, our gain being 7, against 1,300,000 for Philadelphia, and 800,000 for New York.

Greater difference in our favor prevailed in exports; our gain being 6, against 5,500,000 for Philadelphia, while New York shows a loss of 1,200,000.

The attempt at speculation and to force our crops upon European markets v responded to, and their wants were supplied from the Black Sea provinces, Egy India.

This speculative action induced the promotion of railroad enterprises to the growing districts in India for protection; the increased freight on India carg ing counterbalanced by the extremely low price of labor.

The speculative element is a disease of a most obnoxious and infectiou which agricultural productions innocently communicate at every step fr seed to consumption. The system is generally acknowledged and is beyond imm control, but it has introduced poisonous rancor into the heart of our whole bo porate; it has attracted a large accession of irresponsible men from an oversu fairly educated intelligence to live by their wits in commercial life, that shoul

ought other, if humbler, occupations; and these have inoculated the circles of their friendship and relationship, creating distaste for the wholesome pursuits of life, and have surrounded legitimate business with risks and liabilities out of all proportion to the modest profit to be derived from it; and worse than all, it has dimmed the luster of rectitude until it has ceased to reflect the light of truth and honor, in all their beauty, upon the companionship and business association of men.

It is claimed that one reason why a larger percentage of grain is not received from the great centers, such as Chicago, Cincinnati, Saint Louis, &c., is owing to the rigid rules and high standard maintained by the inspectors at Baltimore, which office is filled by the Corn and Flour Exchange.

From the decision of these inspectors there is no appeal, and no pressure of a portion of the members would avail.

This is recognized abroad, and European receivers are willing to pay from 3 to 5 cents per bushel more on these certificates than on those of the New York Exchange.

It is conceded that the charges at this port are from $1,500 to $2,500 less than at any other Atlantic port, while the facilities for dispatch are equal in every particular.

Prominent in the economy of this market is the lower rate of rail transportation recognized by the principle of differential rates, as to length of route, by the trunk lines in their pooling compact. Thus, whatever may be the rate fixed upon from Chicago to New York, the rate for traffic to Baltimore is 6 per cent. less per 100 pounds on dry goods, and 3 per cent. per 100 pounds on grain.

Sailing vessels for this trade are almost now, and soon to be *entirely*, superseded by steamers.

These figures present sufficient refutation of the prediction that once the tolls on the Erie Canal made free, that avenue would obliterate all other interests than those to which it contributes, and the influence of cheap barge transportation on the Mississippi River not having been felt so keenly as was anticipated, fears from these two quarters have been greatly magnified.

The receiving and storage capacity of the grain elevators at Baltimore is as follows:

Elevators.	Proprietors.	Storage capacity.
.....	Baltimore and Ohio Railroad	500,000
.....	.....do	1,500,000
.....	.....do	1,800,000
.....	.....do	250,000
anton, 1	Operated by Baltimore Elevator Company	500,000
anton, 2	.....do	100,000
anton, 3	.....do	750,000
Total	.....	5,400,000

Hats, caps, furs, and straw hats (manufacturers and jobbers).

umber of firms*	17
apital	$980,000
ands	1,040
ages	$680,000
les or product	$2,855,000

One-half of the above traffic, $1,427,500, may be assigned to straw goods, a business eadily increasing. That portion relating to manufacture exclusively, and established since 1870, reaches a value of $851,700, and has, within the two years last past, arly doubled, and furnishes employment to seven hundred and fifty persons. Reputation for a nice class of goods has become generally acknowledged in all parts of the untry, so that the Baltimore straw hat is a synonym of superior quality. The balce of the traffic, $1,427,500, including the articles of felt and fur, are mostly the anufacture of Massachusetts, Connecticut, New York, and New Jersey.

Besides the straw braids used in the well-known Mackinaw hat, coming from Michin and Canada to the extent of $150,000 in value, there comes from China, England, d Germany two-thirds of the amount used; the remaining third, consisting of finer oods, from Switzerland, Italy, and France. New England furnishes manufactured raw hats to the value of about $575,800.

In the distribution the total for straws, $1,427,500, is nearly in the following proortions: the cities of New York, Boston, and Philadelphia, for finer grades, $310,000; aryland, Delaware, Pennsylvania, Virginia, and West Virginia, $264,500; the Caro-

*It is difficult to separate the distributive from the manufacturing interest in the above line, in many ses the jobber of straw hats being also a manufacturer. As the manufacturing interest consists of t one-third of the total value this interest has been classed with the distributive trade.

linas, Georgia, Tennessee. Alabama, Mississippi, and Texas, $380,900; Ohio, Ind Illinois, and Missouri, $372,800, and for California and Oregon, $99,300.

The total for the cloth, felt, and fur, amounting to $1,427,500, may be thus pr tioned: Maryland, Delaware, Pennsylvania, Virginia, and West Virginia, $713,75 Carolinas, Georgia, Alabama, Tennessee, Missouri, and Texas, $450,000; and for Indiana, Kentucky, Illinois, and Missouri, $263,700.

Hardware.

Commission:	
Number	
Capital	$71
Employed	
Wages	$
Sales	$3,1
Jobbers:	
Number	
Capital	$8
Employed	
Wages	$1
Sales	$1,7
Cabinet hardware:	
Number	
Capital	$4
Employed	
Wages	$
Sales	$8
Railroad and machinist supplies:	
Number	
Capital	$2
Employed	
Wages	$
Sales	$5
Saddlery hardware:	
Number	
Capital	$6
Employed	
Wages	$
Sales	$1,0
Total sales	$7,3

Of the supplies in this branch of business only about 10 per cent. are imp England furnishing fine cutlery and Germany anvils and some other heavy go

The greater proportion, about 75 per cent., comes from Maryland, Pennsyl New York, Connecticut, and Massachusetts, and Ohio, of the Western State nishes about 15 per cent.

The distribution is nearly as follows: 25 per cent. to the city and throughc State; 35 per cent. to Virginia, the Carolinas, Tennessee, Georgia, Alabama, an sissippi; 25 per cent. to West Virginia, Ohio, Indiana, Illinois, and Missouri; cent. to Pennsylvania, Delaware, New York, and New Jersey.

In all its branches the sales aggregate over $7,000,000, and are increasing. facilities, in all respects, being the same as in other cities, with expenses at figures, it is conceded by other markets that Baltimore is a close competitor i business.

Wholesale leather dealers, also tanners and curriers.

Number of firms	
Capital	$2,9
Hands	
Wages	$2
Product or sales	$7,2

Statement of hides received during years 1879 to 1883.

1879	2
1880	2
1881	2
1882	2
1883	*2

*Estimated.

Statement of sides of leather received during years 1879 *to* 1883.

	Oak, by inspection.	Hemlock, estimated.	Total.
1879	332,000	210,000	542,000
1880	362,000	235,000	597,000
1881	408,000	240,000	648,000
1882	396,000	225,000	621,000
1883	394,206	250,000	660,000

Oak leather is supplied by tanneries in which home capital is invested exclusively located in Maryland, Virginia, and West Virginia, 300,000 sides; received on commission, 110,000 sides.

Leather received on commission comes from Ohio, Pennsylvania, Kentucky, and West Virginia, this section supplying generally the heaviest and best quality, and, in the aggregate, of the greatest value. The Southern States, excepting Florida, Louisiana, and Texas, also furnish large quantities and of increasing value.

Hemlock leather comes chiefly from Northwestern Pennsylvania and New York, and averages about 250,000 sides each year.

Hides are purchased by our large tanners and dealers here and from Chicago, Detroit, Saint Louis, Cincinnati, New York, and Boston, chiefly, but also in Memphis, Indianapolis, and Kansas City, as they may be picked up.

Hides received on commission are principally from the Southern States, chiefly from Georgia, Alabama, and the Carolinas, and a small portion only from the West.

In the distribution for sole-leather, home market consumes about $800,000. Philadelphia, New York, Boston, Chicago, Detroit, Albany, Syracuse, Utica, Rochester, Saint Louis, and Cincinnati take large quantities, while the more remote Western cities and the Southern States take considerable quantities in small lots.

Besides the foregoing Baltimore receives from 25,000 to 30,000 sides of inspected oak leather from Frederick, in this State, and probably $500,000 worth of harness leather, finished kips, calf skins from Maryland, Pennsylvania, Ohio, and other Western States. The value of hides imported into Baltimore for the year 1883 was $248,303, having gradually increased each year since 1877, when it was $184,422.

The trade in leather ranks high among the leading industries of the city, and is in oak leather very prominent throughout the country. This is peculiarly a product of the section west and southwest of the Susquehanna, and the better class of goods demand the "oak bottoms," for which this has for a long time been the source of supply of the manufacturers of the East, North, and Northwest.

The largest oak tannery in the world, located at Luray, Va., is exclusively owned and operated by a Baltimore firm.

Statement of live animals received at Baltimore during the year 1883.

Animals.	Number.	Value.
Sheep	442,112	$2,652,672
Beeves	204,534	15,408,060
Hogs	447,339	5,262,746
Total		23,323,478

Receipts and exports of beef.

Years.	Receipts.	Exports.
	Number.	*Number.*
1873	94,664	.....
1874	130,946	.....
1875	113,379	.....
1876	109,854	.....
1877	112,862	.....
1878	117,675	2,989
1879	150,829	4,378
1880	138,969	10,971
1881	122,164	3,368
1882	168,235	3,819
1883	204,534	14,132

Direction of movement (beef).

	Number.
Home consumption	122,000
Export	14,132
Shipment east and south	68,402
Total receipts, 1883	204,534

Source of supply of beef for five years.

	1878.	1879.	1880.	1881.	1882.	1883.
	Number.	*Number.*	*Number.*	*Number.*	*Number.*	*Number.*
Virginia	44,363	52,710	51,906	59,525	82,051	91,[illegible]26
West Virginia	25,722	38,698	21,320	18,449	26,169	37,[illegible]71
Ohio	24,956	32,700	28,445	16,689	23,069	26,[illegible]30
Illinois	10,971	7,488	5,349	7,732	11,332	13,[illegible]22
Maryland	4,501	6,912	8,032	8,490	12,122	15,[illegible]91
Pennsylvania	2,972	3,631	6,556	6,269	7,324	10,[illegible]24
Missouri	1,213	6,568	16,009	4,157	4,913	7,[illegible]13
Tennessee	1,066	957	842	302	} 1,255	2,[illegible]67
North Carolina	499	569	.....	299		
Kentucky	412	596	510	266		

Receipts of live stock.

SHEEP.

	Number.
1877	203,34[illegible]
1878	246,28[illegible]
1879	243,52[illegible]
1880	248,04[illegible]
1881	305,49[illegible]
1882	341,60[illegible]
1883	442,11[illegible]

HOGS.

	Number.
1874	357,547
1875	277,49[illegible]
1876	247,462
1877	319,661
1878	360,514
1879	356,524
1880	336,867
1881	338,551
1882	306,002
1883	447,339

Among these receipts, hogs are from the States of Ohio, Indiana, Illinois, and Missouri, the exact proportions of which cannot be definitely stated.

Baltimore, as a cattle market, has a good standing and is rapidly increasing in importance, having doubled its business since 1873. Her proximity to the grazing fields, the pasturage of which is renowned, the privileges provided by the ample stockyards in her immediate neighborhood, the light dues levied upon the drovers, and the unusual care bestowed upon the droves, with the utmost facility for shipment, tend to promote the interest. The choicest stock is that received from Virginia and Tennessee, and, it is claimed, for the quality, generally, of the Baltimore beef, that there is none superior to it.

The transactions in hogs since 1874 have increased 25 per cent.

The increase in value of exports from Baltimore has been from $485,383 in 1882 to 903,288 for 1883.

Liquors (wholesale and rectifiers).

Number	55
Capital	$2,279,000
Hands	440
Wages	$297,800
Sales	$6,894,500

Leaving out that part of the business which relates to imported goods, a most important feature is that of domestic whisky.

The United States commissioner reports 4,178,644 gallons rectified, and 1,053,089 gallons distilled in this district during the year 1883.

The distribution, for the same time, amounted to about 5,000,000 gallons, of which our own distilleries supplied 25 per cent., the remaining 75 per cent. being received from Ohio, Illinois, and Indiana.

The standard of the Maryland whisky is high, and is thoroughly appreciated in its higher grades in the Northern cities and throughout the Southern States.

Most of the distribution is made upon the reputation of the brands of the firms engaged. The character this market has always enjoyed for fine old whiskies, the demand for which is steadily increasing, is a guarantee that the business will attain greater proportions.

Lumber dealers (wholesale and commission).

Number	74
Capital	$2,855,000
Hands	1,315
Wages	$1,025,700
Wholesale and jobbers	$10,725,000

The amount of sales, at wholesale, is estimated upon the basis of receipts, as follows:

Kinds of lumber.	Quantity.	Value.
BY WATER.		
	Feet.	
Yellow pine	165,000,000	$2,475,000
Shingles	50,000,000	425,000
BY RAIL.		
Hard woods	40,000,000	2,000,000
White pine	70,000,000	1,575,000
Total value		6,475,000

The amount of transactions by the jobbers and manufacturers is based upon estimates of consumption in Baltimore, as—

Kinds of lumber.	Quantity.	Value.
	Feet.	
Yellow pine	90,000,000	$1,350,000
White pine	40,000,000	900,000
Hard woods (averaged)	40,000,000	2,000,000
Total value		4,250,000

The supply of yellow pine is from Maryland, Virginia, North and South Carolina, and Georgia; of shingles, mostly from North Carolina; hard woods (walnut, &c.), from Indiana; poplar, from West Virginia; oak and ash, from Pennsylvania, Ohio, and Indiana.

White pine is received, principally, from Pennsylvania, but in considerable quantities from Ohio, Michigan, and the Northwest.

The distributition is as follows: 50,000,000 feet white pine; 100,000,000 feet yellow pine, and 40,000,000 feet hard woods were used in Baltimore and immediate vicinity for building and manufacturing purposes, such as furniture, moldings, ovals, picture-frames, &c.; 40,000,000 shingles to counties of Maryland, on the bay and upper counties; also 1,000,000 exported to South America.

It may be observed that the receipts by rail, according to the annexed table, amount to 173,000,000 feet, but a portion of the receipts over the Baltimore and Ohio, Baltimore and Potomac, and Western Maryland Railroads were through shipments received here, but, without handling, transferred to the roads running further east.

Receipts by rail, properly speaking, therefore, during 1883, would amount to 110,000,000 feet.

Exports for the same period amounted to $888,090, the material being used chiefly in fitting up vessels for grain and cattle.

Lumber receipts and shipments by rail and water.

Route.	1880.		1881.	
	Receipts.	Shipments.	Receipts.	Shipments.
	Feet.	*Feet.*	*Feet.*	*Feet.*
Baltimore and Ohio	25,437,640	6,103,280	36,201,920	7,285,760
Northern Central	43,436,678	25,173,901	60,548,788	43,253,129
Baltimore and Potomac	4,149,607	6,871,656	9,479,706	8,071,450
Total	73,023,925	38,158,837	106,239,414	58,610,339

Route.	1882.		1883.	
	Receipts.	Shipments.	Receipts.	Shipments.
	Feet.	*Feet.*	*Feet.*	*Feet.*
Baltimore and Ohio	50,014,440	7,232,080	50,017,640	8,436,360
Northern Central	67,678,027	48,186,894	81,537,434	40,941,490
Baltimore and Potomac	21,044,832	12,176,840	33,282,640	13,011,022
Philadelphia, Wilmington and Baltimore	2,612,800	48,230,240	4,783,315	51,067,116
Western Maryland	2,488,442	3,901,581	1,746,336	3,778,998
Maryland Central	830,260	480,000	1,613,600	621,960
Total	144,668,601	120,207,275	172,980,965	117,856,946

Receipts by water, 1883.

Shingles	number..	50,000,000
Yellow pine	feet..	165,000,000

This trade in its various branches ranks very high. Our situation for the prosecution of the business is most favorable.

It is a point at which the Susquehanna hemlock, Carolina yellow pine and cypress, the West Virginia hickory and poplar, the Indiana, Ohio, and Pennsylvania hard woods and white pine, and the West India and Central American hard woods and veneering materials meet.

The different railways stretch out their arms to the Northwest and West, acting both as dispenser and receiver.

The foregoing table exhibits the receipts and shipments by rail for the past four years, and indicates the immense advance made by the trade during that time.

There has never been kept any regular account of the receipts by water, but the amount stated as having been received during the year 1883 may be taken as substantially correct.

Millinery goods (wholesale).

Firms	8
Capital	$848,800
Hands	216
Wages	$155,400
Sales	$3,808,000

The source of supply is chiefly domestic. Hats and bonnets are received from New York and New England, equaling 20 per cent. of the entire value.

Silks and ribbons are from New York and New Jersey and amount to 30 per cent.

Artificial flowers are chiefly from New York and Philadelphia and amount to 18 per cent.

The imports consist of hats, bonnets, ribbons, silks, velvets, artificial flowers, feathers, and various trimming goods, from France, England, and Germany, and amount to 25 per cent. of the value.

The distribution is made throughout the West and South, and to the most distant States and Territories, from the Gulf to the Golden Gate.

The largest house engaged in this business in the country, and perhaps in the *world, is located* here.

The trade is an active one, and besides the force employed noted above, this is increased at certain seasons of the year at times by a thousand or more females.

Naval stores and ship chandlers.

Number	30
Capital	$1,112,000
Sales	$3,345,100

Receipts and exports of naval stores.

Year.	Receipts.			Exports of rosin.
	Spirits of turpentine.	Rosin.	Tar and pitch.	
	Barrels.	*Barrels.*	*Barrels.*	*Barrels.*
1871	22,850	79,352	13,243	27,914
1872	21,657	80,020	13,467	24,592
1873	17,979	80,346	19,243	15,707
1874	18,867	71,301	21,943	22,837
1875	16,749	70,694	18,586	15,817
1876	19,557	82,658	23,144	4,600
1877	16,139	65,753	20,043	6,785
1878	16,379	47,576	19,544	3,340
1879	20,569	89,578	15,062	3,120
1880	19,665	94,158	13,169	13,081
1881	19,433	92,759	9,324	27,082
1882	22,837	141,291	7,961	40,360
1883	27,321	158,124	12,452	54,459

The exportations of naval stores were mostly confined to Liverpool. The interior movement was to Chicago, Saint Louis, and Cincinnati.

Receipts at this port were larger for 1883 than for any previous year, and in rosin the increase has been gradual. The quantity in excess in 1882 over 1881 was 48,523 barrels, and in 1883 over 1882, 16,833 barrels.

Baltimore has superior facilities for the receipt and shipment of naval stores, either to foreign ports or to the interior by rail.

Our own market supplies the ship chandlers with their stores, and they supply the wants of the foreign and domestic shipping.

Paper, paper bag, and box (wholesale dealers).

Number	17
Capital	$2,817,000
Hands	685
Wages	$320,580
Product or sales	$6,650,000

The product of several paper mills located in Maryland, Pennsylvania, and Delaware, controlled by Baltimore capital, comes to this market.

Of printing paper alone the daily yield is 30 tons. Of book, letter, wrapping, straw, and manilla, the quantities are such that for the latter three the market is independent of outside supplies. In quantities, but particularly for the finest qualities, the supply from the north is large. Paper bags of every size, quality, and grade, for every department of trade, also boxes for confections and store-keepers' use, form an important feature.

The distribution to the markets in the north bears good proportion to what is received from that quarter.

The distribution is to Maryland, Pennsylvania, and Delaware, 35 per cent. Southern States 25 per cent., and Western States 40 per cent.

Inasmuch as so large a part of the above production lies outside of Baltimore, it is preferable to class this with distribution.

Provisions (wholesale dealers).

Number	14
Capital	$2,155,000
Hands	174
Wages	$75,690
Sales	$9,550,600

Slaughterers and meat packers.

Number	9
Capital	$800,000
Hands	225
Wages	$98,500
Value of materials	$3,104,320
Product	$3,502,840

Receipts of Western hog product at Baltimore during the years 1875 *to* 1883, *inclusive.*

Years.	Pounds.	Years.	Pounds.	Years.	Pounds.
1875	140,000,000	1878	122,964,000	1881	121,586,000
1876	132,578,840	1879	133,572,000	1882	81,912,000
1877	107,632,000	1880	93,542,000	1883	96,396,000

Exports of provisions from Baltimore during the years 1874 *to* 1883, *inclusive.*

Years.	Value.	Years.	Value.	Years.	Value.
	Dollars.		*Dollars.*		*Dollars.*
1874	2,223,230	1878	3,183,078	1881	6,184,137
1875	1,686,751	1879	3,485,666	1882	915,889
1876	2,347,991	1880	4,208,727	1883	1,252,991
1877	2,628,707				

Exports of tallow from Baltimore during the years 1881 *to* 1883, *inclusive.*

1881	$219,943
1882	102,062
1883	98,403

England, France, Belgium, and Germany received these shipments. An apprehension that disease might be transmitted through the trichinia in pork, caused the Governments of Germany and France to prohibit, within their limits, the importation of our salted meats.

The effect upon exportations is shown by the foregoing table in the diminution from 1881 of over $6,000,000, to an amount less than $1,000,000 for 1882.

Our consuls report that recent investigations have dissipated these fears, and the necessity of removing the prohibition is becoming obvious, and is demanded by the laboring classes. So that it may be expected the movement of these articles from us may resume its former proportions.

The supply is from Ohio, Illinois, Indiana, and Missouri, the greater part being from the States of Illinois and Indiana.

The home distribution is to the States of Maryland, Virginia, West Virginia, and the Carolinas.

Statement showing total value of petroleum traffic (domestic and export) in Baltimore for the year 1883.

	Quantity.	Value.
	Gallons.	*Dollars.*
Exported	11,789,080	$915,388
Domestic	17,599,897	1,507,981
Total value		2,423,369

ement of petroleum exported from the ports named for the years 1879 *to* 1883, *inclusive.*

Years.	New York.			Philadelphia.		
	Barrels.	Cases.	In gallons.	Barrels.	Cases.	In gallons.
.....	4, 093, 440	7, 456, 286	279, 234, 860	1, 424, 275	1, 861, 858	89, 832, 330
.....	3, 984, 196	5, 251, 247	251, 722, 270	905, 036	904, 409	54, 295, 890
.....	5, 172, 375	9, 592, 469	354, 543, 440	1, 560, 959	3, 247, 091	110, 518, 860
.....	5, 340, 040	10, 295, 477	369, 926, 770	1, 179, 344	2, 483, 745	83, 804, 650
.....	5, 930, 575	10, 577, 121	402, 299, 960	978, 074	3, 065, 780	79, 561, 500

Years.	Baltimore.			Boston.		
	Barrels.	Cases.	In gallons.	Barrels.	Cases.	In gallons.
.....	459, 880	.....	22, 994, 000	53, 237	88, 738	3, 549, 230
.....	294, 610	.....	14, 730, 500	22, 933	51, 993	1, 666, 580
.....	371, 218	.....	18, 560, 900	74, 900	342, 232	7, 167, 320
.....	232, 465	1, 150	11, 634, 400	14, 023	366, 785	4, 368, 500
.....	231, 469	21, 562	11, 789, 080	.....	254, 689	2, 546, 390

Years.	Richmond.	
	Barrels.	In gallons.
.....	45, 397	2, 269, 850
.....	26, 836	1, 341, 800
.....	4, 465	223, 250
.....	10, 494	524, 700
.....	3, 502	175, 000

withstanding the fact that Baltimore is the nearest port to the oil-producing as of West Virginia and Pennsylvania, the trade in this article cannot be viewed encouraging aspect. The laying of pipe has so cheapened transportation by hat the traffic is no longer competed for by the Baltimore and Ohio road, and nly receipts by rail have been via the Northern Central road. The refining busi- is consolidated, and controlled mainly by those whose interests lie elsewhere; ier words, the interests being largely centered in New York and Philadelphia, tandard Oil Company arbitrarily forces the production to those cities; and by ig the price lower than in Baltimore, our export trade, thus handicapped, has ished.

ient of petroleum, showing receipts, exports, and home consumption in Baltimore from 1879 *to* 1883.

Years.	Receipts.		Exports.	Home distribution.
	Barrels.*	Gallons.		
.....	531, 609	26, 580, 450	22, 994, 000	3, 586, 450
.....	441, 465	22, 073, 250	14, 730, 500	7, 342, 750
.....	571, 895	28, 594, 750	18, 560, 900	10, 033, 850
.....	498, 493	24, 924, 650	11, 623, 250	13, 301, 400
.....	587, 779	29, 388, 977	11, 789, 080	17, 599, 897

* Fifty gallons to barrel.

Freight to Antwerp or Bremen, per barrel, by sail during 1883.

Months.	Rate of freight.	Months.	Rate of freight.	Months.	Rate of freight.
	s. d.		*s. d.*		*s. d.*
January	3 9	May	2 3½	September	3 ½
February	3 6½	June	2 3½	October	3 4½
March	3 3	July	2 6	November	3 4½
April	2 10	August	3 5½	December	3 4½

It may be stated that the above quantity was received from the oil districts of Pennsylvania, with the exception of (37,986 barrels) 1,899,300 gallons.

Home distribution included that shipped throughout Maryland and to Virginia, the Carolinas, and Georgia. This distribution has increased from 3,500,000 in 1879 to 18,000,000 gallons in 1883, arguing favorably for Baltimore's facilities in this connection. The capacity for refining crude oil in this city is about 800,000 barrels per annum, and the supply can, at any time, be increased to satisfy any demand.

Rubber goods.

Number	4
Capital	$425,000
Sales	$1,415,500

Of these goods the boots and shoes are received from New England and Rhode Island, to the value of $800,000.

The clothing comes from New York and Connecticut, to the value of $350,000.

Mechanical rubber supplies, such as packing, belting, hose, &c., are from Boston and New Jersey, and amount to $150,000.

The distribution for the greater part is in the city, probably from $600,000 to $700,000 per annum. The States of Maryland, the Virginias, North Carolina, and Georgia, take $350,000, and the Western States the remainder, $350,000.

Seedsmen (feed and garden).

Number	13
Capital	$490,000
Sales	$1,738,000

Clover seed is received chiefly from Pennsylvania and New York, and timothy from Chicago. Garden seeds, for the greater part, are from Canada, New York, and the New England States, and amount yearly to from $80,000 to $90,000.

The sales to Delaware, Virginia, Tennessee, North Carolina, and the further Southern States, and in the State of Maryland, amount to $550,000.

The exportations amount to $1,098,000, and mark a regular increase.

In 1883 there were cleared for export 159,692 bushels; in 1882, 82,922; in 1881, 33,598, and in 1880, 12,891.

Salt (importers and dealers.)

Number	2
Capital	$250,000
Sales	$450,000

Imports for the year 1883 were valued at $157,647.

Imports of salt at Baltimore for the past fourteen years.

Years.	Liverpool.	Coast.	Bulk.	Years.	Liverpool.	Coast.	Bulk.
	Sacks.	*Sacks.*	*Bushels.*		*Sacks.*	*Sacks.*	*Bushels.*
1869	136,674	16,367	104,763	1877	290,166	12,355	89,301
1870	149,112	1,815	122,667	1878	213,628	4,024	183,316
1871	216,872	7,088	101,413	1879	409,758	.....	173,357
1872	167,527	16,073	248,693	1880	333,637	2,000	185,000
1873	280,146	8,206	142,985	1881	441,974	450	132,659
1874	269,893	8,000	201,486	1882	277,141	.....	113,390
1875	263,067	3,800	164,493	1883	286,932	1,815	122,667
1876	301,586	6,400	118,504				

Salt, which is in constant demand, is often brought here from Liverpool at low rates, or even as ballast; the supply, therefore, is somewhat affected by the rates of outward freights offered vessels for return cargoes of grain to Europe.

To the West and Northwestern States, points to which our shipments are mainly directed, during the closing of the Erie Canal, such shipments can be made from this point as advantageously as from any other.

Tobacco (leaf).

Number of firms		22
Capital		$750,000
Taken for home manufactures	pounds..	9,234,638
Taken for manufacture of cigars and cigarettes	do....	2,066,000
Value		$1,695,090
Exports	hogsheads..	33,733
Value		$2,757,821
Total values		$4,452,911

Value of exports from 1875 *to* 1883 *inclusive.*

1875	$5,609,526
1876	5,739,612
1877	6,446,589
1878	5,166,604
1879	6,247,516
1880	4,196,299
1881	3,777,174
1882	2,826,474
1883	2,757,821

Statement of tobacco receipts at Baltimore and source of supply according to inspection, also exports and stock on hand, for fourteen years.

Years.	Maryland.	Ohio.	Kentucky and other.	Total.	Inspection.	Exports.	Stocks.
	Hhds.	*Hhds.*	*Hhds.*	*Hhds.*	*Hhds.*	*Hhds.*	*Hhds.*
1870	25,694	13,614	2,200	41,510	41,510	32,519	7,345
1871	30,956	14,432	4,183	49,571	49,571	51,146	5,945
1872	33,254	16,347	1,608	51,209	51,209	49,983	6,908
1873	38,748	24,126	2,193	65,067	65,067	52,065	14,749
1874	27,754	28,599	1,612	57,965	57,965	49,241	14,627
1875	33,523	6,036	798	40,357	40,357	33,070	11,610
1876	42,111	17,800	987	60,898	60,898	52,714	12,811
1877	38,905	22,914	444	62,263	62,263	46,322	23,340
1878	46,521	16,955	715	64,191	64,191	58,020	18,833
1879	37,830	16,440	455	54,725	54,725	37,200	24,677
1880	36,871	8,285	211	45,367	45,367	39,616	21,636
1881	27,720	12,443	469	40,362	40,362	33,900	19,737
1882	35,898	8,209	132	44,239	44,239	36,809	17,711
1883	33,105	7,650	210	40,965	40,965	33,703	15,732

Leaf tobacco receipts in Baltimore, with source of supply as indicated by railroad movements in years 1880, 1881, *and* 1882.

Years.	Baltimore and Ohio Railroad: Ohio, Maryland, and Kentucky.	Baltimore and Potomac Railroad: Maryland and Virginia.	Northern Central Railroad: Ohio, Kentucky, and Pennsylvania.	Bay and York River lines, &c.: Virginia and North Carolina.	Total.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
1880	20,716,699	10,124,228	12,490,093	3,585,872	46,916,892
1881	19,834,000	9,102,380	11,439,451	4,319,369	44,695,200
1882	15,468,200	16,479,195	8,467,174	8,238,431	48,653,000
1883	31,827,800	15,345,455	9,521,833	.....	.....

Stock tobacco on hand in leading markets for years 1880, 1881, *and* 1882.

Markets.	December 1—			
	1880.	1881.	1882.	1883.
	Hhds.	*Hhds.*	*Hhds.*	*Hhds.*
Saint Louis	7,837	7,221	3,876	.....
Louisville	9,020	5,708	4,912	.....
Cincinnati	7,375	10,444	12,155	.....
New York	50,268	45,342	24,928	.....
Richmond and Virginia markets	13,997	11,415	16,013	.....
Baltimore	26,214	21,933	17,711	15,732
London	32,227	29,135	21,257	.....
Liverpool	39,490	37,461	28,771	.....
Bremen	10,435	5,249	2,863	.....
Antwerp	3,636	1,426	451	.....

This embraces the warehouse statements of *inspected* tobacco in Baltimore, but there are always considerable stocks of tobacco other than Maryland and Ohio not inspected and not embraced in these statements.

Statement of export movement from Baltimore from January 1 *to December* 31 *for sixteen years.*

Years.	Bremen.	Rotterdam.	Amsterdam.	England.	France.	Spain.	Trieste.	Italy.	Antwerp.	Total.
1867	22,190	21,137	5,467	2,358	9,959	.....	.....	.....	.....	61,111
1868	9,381	5,632	7,910	2,109	5,766	1,669	.....	.....	.....	32,467
1869	17,358	7,763	6,992	1,192	9,672	.....	.....	.....	.....	42,977
1870	9,697	8,014	5,893	1,908	4,872	.....	202	.....	46	30,632
1871	15,984	12,309	5,719	2,209	8,940	.....	.....	.....	.....	45,161
1872	14,103	10,475	6,042	2,367	8,515	.....	.....	613	221	42,336
1873	12,673	10,516	5,913	1,398	17,495	1,279	.....	1,252	126	50,652
1874	14,910	10,889	4,191	2,921	9,994	.....	.....	6,336	.....	49,241
1875	8,485	7,200	2,691	1,237	8,976	2,337	.....	2,127	17	33,070
1876	19,933	14,624	4,938	1,822	11,397	.....	.....	.....	.....	52,714
1877	14,371	13,888	1,840	611	12,886	.....	.....	2,726	.....	46,322
1878	18,808	18,367	3,578	301	15,476	.....	.....	1,490	.....	58,020
1879	9,953	10,219	2,635	1,237	12,975	.....	.....	.....	241	37,260
1880	6,762	11,007	1,970	1,829	18,048	.....	.....	.....	.....	39,616
1881	2,572	11,152	189	470	16,057	.....	.....	435	25	33,900
1883	6,367	8,280	2,658	225	12,224	3,309	.....	640	.....	33,703

In leaf-tobacco Baltimore has always occupied a prominent and important position in the tobacco markets of the world. Relating to this branch of commerce, as she is the only seaboard market of the world, her position is unique. At the same time this is the only market in which is received from first hands the entire crops of two important tobacco-producing States—Maryland and Ohio. These two considerations constitute for her a strong position in the grasp of the business.

By the above statement the stock on hand for the years 1880, 1881, and 1882 indicate her rank to be second in the United States and fourth in the world.

The counties of Anne Arundel, Calvert, Carroll, Charles, Frederick, Howard, Montgomery, Prince George's, and Saint Mary's produce almost the entire crop of Maryland tobacco, in three different types. These, used almost exclusively for smoking purposes, correspond to the varied character of the soil in those sections, the finest qualities being the growth of Montgomery, Frederick, and Carroll Counties, lying to the north and west of the State.

Trade with Germany during the year 1883 was retarded by the effort, instigated mainly by Bismarck, to make the manufacture of the article a Government monopoly. This for the time was defeated, but a higher tariff was imposed, which has had the effect of reducing the demand from that country for lower grades.

The demand for these grades had been the more extensive; consequently, the article of stems in that quarter, except in limited quantities, has become almost unmerchantable.

For one hundred and twenty-five years tobacco has been one of the most important products of Maryland, as early as 1761 its value alone exceeding the value of all other commodities by nearly $700,000, and always since that time Baltimore has continued to maintain the high position gained for herself as a market for the leaf.

Maryland and Ohio tobacco are of light red and yellow color, and find their market exclusively here. That of Virginia is both yellow and dark rich color, while North Carolina for the most part gives a bright color.

In these growths Baltimore deals largely, they being taken by our manufacturers, also by our exporters, on orders for foreign account.

In the latter is classed a recent acquisition to business at this port in the shape of Régie contracts, for Virginia tobacco, purchased for exportation by a Baltimore firm.

To a limited extent only is tobacco received from Pennsylvania at this point, New York and other eastern buyers taking the bulk for the manufacture of cigars.

For the same reason very little of the Connecticut growth reaches us.

Like cotton, tobacco, though both of these are produced in other countries, forces its way throughout the countries of Europe, and the two are tremendous factors in our commerce with the nations.

France, Spain, Italy, Austria, and Great Britain draw largely upon us, guarding themselves profitably by monopolies and heavy import or other tax to the benefit of their revenue.

Austria takes heavy dark Virginia and Kentucky growth, with a minimum of Maryland and Ohio. France takes many shades of Virginia, Ohio, and the West, and is the largest purchaser of Maryland and Ohio grades, Holland being the next largest. Spain takes Kentucky and Virginia growths, and occasionally low-grade Maryland. Italy takes Kentucky and Virginia, of dark color, with small proportions of Maryland and Ohio.

A serious obstacle to the tobacco business is the State compulsory inspection, though only applied to the production of the State proper. Conceiving that it is conducted as a political machine, it is easy to understand the impediments it may throw in the way of properly conducted business and the extent to which trade, morals, and the public treasury may suffer. Half a million dollars is estimated to be the loss the trade suffers annually from the working of this law.

The inspection is often so unreliable and irresponsible in its character that this must be discounted in transactions to the loss of the grower.

Owing to the unsatisfactory inspections, manufacturers in this country decline altogether to use our product. European manufacturers, formerly extensive buyers, decline. England has ceased to buy it, and American consuls on the Continent of Europe have made up reports of the unsatisfactory position and the loss to the revenue which results from the system as enforced by our State.

There will be no cessation in the effort to abolish this ruinous bureau, too often the plans of reward of electioneering influence, bestowed without regard to fitness for position, with each change in the gubernatorial chair, and it is earnestly hoped and expected that another two years, the period between the sessions of the State legislature, will witness a change of sentiment, when the trade will be released from its shackles and the article in question, of real merit in itself, will command its just value in the markets of the world.

Other tobacco than the growth of our own State, unhampered by these regulations, assorted in free-inspection warehouses, not forced to inspection by the State, derives the benefits of the other inspection facilities, and the trade in tobacco grown in other States increases with us correspondingly as that of our own growth diminishes.

Wall-paper and window shades.

Number	74
Capital	$433,190
Hands	450
Wages	$220,941
Sales	$923,100

Previous to the creation of the wall-paper pool in 1879 the bulk of wall-paper used was of domestic manufacture, from the New York, Pennsylvania, and New Jersey mills. Though prices were advanced about 40 per cent. the pool was still able to compete with English importations, which were stimulated by the advance. This importation continues to the extent of about 15 per cent.

Of the twenty-four or twenty-five factories in the country nineteen are located in New York State, and furnish three-fourths of the entire supply. The remaining one-fourth is furnished by Philadelphia and New Jersey.

With the exception of one firm, whose trade reaches to Texas and California, the business is done with Baltimore and its immediate vicinity.

Wooden and willow-ware.

Number	13
Capital	$334,000
Hands	165
Wages	$102,750
Sales	$1,379,000

The articles of home production are, among many others, stamped tin, glass, oak, willow-wares, corks, brooms, brushes, paper and paper bags, cotton twine and rope, seines, and refrigerators, constituting about 50 per cent. of the entire value.

New York, New Jersey, and Massachusetts supply buckets, mats, and cordage, and the five or six hundred articles useful in house-keeping and for store use. The Western States supply broom corn and handles, veneer dishes, wire sieves, and washboards; these States being Ohio, Illinois, Missouri, and Kansas. These are distributed in about the following proportions:

Maryland, 30 per cent.; Delaware, 4 per cent.; Pennsylvania, 10 per cent.; Virginia and West Virginia, 12 per cent.; North Carolina, 18 per cent.; South Carolina, 10 per cent.; Georgia, 12 per cent.; Alabama, 2 per cent.; and Tennessee, 2 per cent.

Recapitulation of distributive trade.

Branch of trade.	Value.	Branch of trade.	Value.
Agricultural implements	$1,450,000	Leather	$7,205,000
Boots and shoes	7,075,000	Live animals	23,323,478
Butter and cheese	3,800,000	Liquors	6,824,500
China, crockery and, queensware	1,374,500	Lumber	10,725,000
Cloths, cassimeres, vestings, and tailors' trimmings	3,585,000	Millinery	3,308,000
Coffee	7,523,825	Naval stores and ship-chandlery	3,345,100
Carriages and wagons	650,000	Paper	6,650,000
Coal dealers and miners	8,638,863	Provisions, wholesale, and packers	13,053,440
Cotton	17,827,398	Petroleum	2,423,389
Cooperage (stores)	650,850	Rubber goods	1,415,500
Dry goods, notions, and toys	30,565,000	Seeds	1,738,000
Fish, cured and salted	475,565	Salt	450,000
Flour dealers, wholesale and commission	4,616,000	Tobacco, leaf	4,452,912
Groceries, teas, spices, and coffee roasting	22,976,002	Wall paper	923,100
Grain, bread, and breadstuffs	36,863,298	Wooden and willow ware	1,379,000
Hardware, commission, jobbing, cabinet, railroad supplies, saddlery	2,855,000	Total distributive trade	245,469,699
Hats	7,327,000	Total productive trade	126,124,604
			371,594,303

REVIEW OF THE DISTRIBUTIVE COMMERCE OF BALTIMORE, VIEWED IN ITS COMPETITIVE ASPECTS.

The distributive commerce of Baltimore, consisting of goods jobbed (drawn from the manufacturers, or original dealers, located throughout the country, including those in our own immediate vicinity) is a commerce so natural in its movement as to work out for itself an area clearly defined; one in which the interests of Baltimore exceed those of any other city.

This area is comprised in three sections: part of the middle, all of the southern and southwestern, and parts of the near Western States. In this field Baltimore has competition from three sources, the East, the West, and the South.

That from the East is subdivided into two classes: First, that from Boston, New York, and Philadelphia, markets of the first order; second, that from Norfolk, Richmond, Wilmington, Charlotte, Charleston, Columbia, Atlanta, Macon, Savannah, Montgomery, Mobile, New Orleans, and Memphis, markets of the second order, which latter apply to the Southern States only.

The first area of importance to Baltimore is located in the State of Maryland (including that part bordering on the eastern shore of the Chesapeake Bay). The district of Columbia, part of Delaware, southern part of Pennsylvania, and Virginia, comprising, for Pennsylvania, the counties of Adams, York, Dauphin, Cumberland, Franklin, Fulton, Bedford, and Somerset; and for Virginia the counties of Fairfax, Loudoun, Clark, Warrenton, Shenandoah, Fauquier, Prince William, Rappahannock, Stafford, Culpeper, Page, Rockingham, Madison, Orange, Spotsylvania, King George,

Greene, Augusta, Highland, Bath, Albemarle, Westmoreland, Northumberland, Richmond, Lancaster, Essex, Middlesex, King and Queen, Gloucester, York, Matthews, Nelson, Rockbridge, Alleghany, Botetourt, Amherst, Buckingham, Fluvana, and Appomattox.

The trade in this area which goes to other distributive points, when like commodities are handled in Baltimore, is spasmodic, and in the case of no city amounts to nearly so great value as does the distributive commerce of this city in such section.

Competition in this quarter comes from Philadelphia and New York, but is not oppressive.

Therefore the greater proximity to these sections, with less freight incurred, renders this trade stable and constantly increasing.

The second area, located in the States of North and South Carolina, Georgia, Tennessee, Mississippi, Alabama, Louisiana, Kentucky, Arkansas, and Texas, is, commercially speaking, of the very greatest importance to Baltimore, and is hotly contested for.

The strongest competitors for the trade of the first six named States are Boston, New York, and Philadelphia, but reference to tonnage statements of three of the southern lines, pages ——, shows that Baltimore secured the largest percentage of the trade.

The other competitors, denominated as of the second order, are the southern cities, Norfolk, Richmond, Wilmington, Charlotte, Charleston, Columbia, Augusta, Macon, Atlanta, Savannah, Montgomery, Mobile, and Memphis. Already, in some branches of trade, these markets have become quite prominent.

But for these local or domestic opponents (who draw their supplies largely from this point) Baltimore would control to a greater extent (excepting products of the West) the trade of these sections, the chief hindrance to which is the ability of these markets to distribute more quickly, and at somewhat lower freight, as also to the fact that Baltimore cannot directly market the products of the said territory.

This competition is not detrimental to this city as reflecting her inability to supply goods at lower prices, but operates from the necessity of replacing stocks in small quantities. On the contrary, the great diversity of Baltimore's interests and the privilege of receiving from first hands attract those same buyers in advance of the season's wants, so that the permanency of the city's traffic may not be considered as affected thereby.

In this second area also, particularly in the States of Alabama, Mississippi, Kentucky, Tennessee, Arkansas, Louisiana, and Texas, Western competition becomes very pressing, chiefly from the cities of Saint Louis, Louisville, Cincinnati, and Chicago, and other western and southwestern cities of the second class, such as Memphis, Little Rock, Mobile, Nashville, Houston, &c.

These markets monopolize to a certain extent the distribution of the products of the West, viz, agricultural products, live-stock, and the manufactures of wood and iron, agricultural implements, hardware, &c., also the products of the mines. In other classes of goods as well this competition is becoming formidable.

In the third area, that comprised in parts of the near Western and Southwestern States, as parts of Ohio, Indiana, West Virginia, and Pennsylvania, competition comes from both directions—Boston, New York, and Philadelphia in the East, and Cincinnati, Chicago, and Pittsburgh in the West, and from markets of the second class, such as Parkersburg, Wheeling, and Columbus.

This area is the smallest and perhaps the most hotly contested of any of the sections alluded to, because all of our commercial relations in this territory must be carried on in the line of the greatest commercial resistance or in the direction of the greater number of sources of supply for commodities moved.

Confessing to the difficulties in the path, the past gives encouragement that in this section increase of traffic will be gained year by year and resolutely maintained.

There are a few lines of goods included in the foregoing which embrace a wider field in their distribution, such as straw goods, leather, millinery, paper, coal, and naval stores, which are, in part, originally produced in Baltimore. These find a market throughout every State and Territory, as also coffee, sugar, molasses, foreign fruits, chemicals, iron and steel, and all other articles originating here through being directly imported at this port. Competition in coffee, molasses, sugar, foreign fruits, and chemicals proceeds from New York, Philadelphia, Montreal, Boston, and New Orleans.

The export distribution includes cotton, grain and flour, live animals, petroleum, tobacco, and cooperage materials.

In this branch competition proceeds as follows: Cotton, all Atlantic and Gulf ports; grain and flour, Boston, New York, Philadelphia, and New Orleans; live stock, Boston, New York, and Philadelphia; petroleum, New York and Philadelphia; tobacco, New York.

SOME OF THE LEADING PRODUCTIVE INTERESTS OF BALTIMORE.

Agricultural implements manufacturers.

Number	10
Capital	$375,000
Hands	220
Wages	$114,400
Material	$170,000
Product	$550,000

This is a growing industry, though confined to the more modest style of implements. Nothing has been attained in the way of important inventions, so largely the product of the larger States, as also States where peculiar modes of agriculture exist.

The material is found with us.

The distribution, to a great extent, is confined to this State and adjoining States to the south, with only a trifle for exportation.

Manufactures of boots, shoes, and the uppers for shoes.

Number	17
Capital	$765,500
Hands	2,154
Wages	$714,723
Value of material	$1,459,339
Product	$2,655,560

This industry, being of recent introduction, may present an aggregate of business small, when compared with that of some of the more northern cities, which are recognized as the home of this industry. The steady increase from its introduction to the present time indicates its growth to have been vigorous and healthy. All the conditions are favorable to its development—the abundance and cheapness of labor, the reasonableness of all other charges, as well as the fact that this is the chief source of supply for the raw material—all point to the future as one of promise for this branch of manufacture in this market.

The style and originality, with excellence of workmanship, have given this market a fine reputation. For supply, one-third of total value, or $486,446, consists of oak sole leather from the home market; one-third, or $486,446, calf-skins, 65 per cent. of which is domestic, finished by our curriers, leaving 35 per cent. for imported (French calf and kid). The remaining third, $486,446, consists of brown drillings, ducks of home manufacture, chiefly, and low grades from the South, with kid and goat, of home make, and from Wilmington and Philadelphia, and of buff and green leathers, from New England, and of home make.

This product is distributed as far west as California, and south to Texas, in the following proportions:

Maryland, Delaware, Pennsylvania, Virginia, and West Virginia, $1,129,446; Ohio, Indiana, Illinois, Missouri, California, and the Territories, $265,556; other Western States, $398,334; the Carolinas, Georgia, Tennessee, Alabama, Missouri, and Louisiana, $862,224.

N. B.—See article on boots and shoes under head of distribution (jobbing).

Brick and tile manufactures.

Number of firms	61
Capital	$1,178,902
Hands	1,969
Wages	$507,479
Value of material	$310,224
Value of product	$1,084,921

The peculiar fitness of the soil in the vicinity of Baltimore has given to the bricks made here a name and a fame, and the business is one of great importance.

For terra-cotta work, potteries, and articles used in chemical works, the material abounds in the neighborhood; these different branches are worked with success, indicating expansion in the future. The manufacture of tiles is becoming important from the growing taste displayed for these articles in house decoration. Our productions for design, quaint or elegant, and for perfection of finish, leave little to be desired in comparison with an imported article.

Bread, steam bakeries.

.....	7
.....	$450,000
.....	455
.....	$182,418
terial	$944,945
.....	$1,550,000

nsus of 1880 exhibits the number of bakeries at 316, with a capital of $832,000 oduct of $2,172,000, which includes the family shops that make by hand, above excludes such and includes only the wholesale, or those who bake upon

ur is chiefly from the west, Maryland furnishing only a small part.
aracter of the goods is high and though only a limited amount goes to the iladelphia, the importation of English crackers has greatly declined, as a our improvements in style and excellence.
enterprising West these goods are sent and the expansion in this direction is ed by the lack of transportation facilities.
tribution, beyond the large home consumption, is to Pennsylvania, Maryaware, the Virginias, the Carolinas, Florida, Georgia, Louisiana, and Texas. nts are made to the West Indies and South America and considerable quantiaken by the foreign and domestic shipping.

Clothiers, manufacturers and jobbers.

.....	59
.....	$5,067,000
nployed	12,864
aid	$2,397,900
material	$8,250,760
duct and sales	$12,002,000

holesale manufacture of clothing, commencing as early as the year 1838, much growing proportions in 1848 as in 1859 to take the lead from other

red greatly during the years of the war by the withdrawal of the southern ern trade, which has, since 1865, however, been regained, so that now it ry prominently in comparison with its rivals. The standard of excellence passed elsewhere, and the facilities for producing at a minimum cost, owing expenses, enable our dealers to hold their own against the sharpest compesuch an extent that considerable quantities of the manufactured article find back to the sources of the raw material. This latter is derived in about the ns of five-eighths from New York and New England, one-eighth from Penn- one-eighth from Maryland, one-eighth only being of foreign importation. portance of this industry may be appreciated from the fact that nearly are annually disbursed in it, the greater part of which is distributed among rsons, a worthy class of operatives who find steady employment.

tribution is proportioned about as follows:

l	$900,000
ania	500,000
.....	1,400,000
rolina	780,000
.....	300,000
ginia	906,000
rolina	890,000
e, Georgia, Alabama, and Mississippi	1,080,000
and Texas	800,000
liana, Illinois, Missouri, and such large trade centers as Cincin-	
hicago, and Saint Louis	3,500,000
k and New England	946,000

ge, coach, and wagon manufacturers, carriage goods and children's carriages.

.....	73
.....	$398,000
.....	639
.....	$279,836
.....	$389,173
.....	$905,850

Among the articles used leather is almost exclusively of domestic manufacture, the enameling, graining, and finishing being done in Newark, N. J., and in New York, the cloth and carpets being foreign and domestic, the former in proportion of 65 per cent. foreign, and 35 per cent. domestic; and for carpets, probably, foreign 15 per cent. and American 85 per cent.

Hubs, spokes, rims, shafts, and bows come from Ohio, Indiana, Pennsylvania, and North Carolina; springs from Newark and Pittsburgh; glass, in the higher classes of coach, is of French manufacture.

The work, from the most stylish coach to the plain vehicle for suburban use, is of the best class. The heavy class, from the express and transportation to the ordinary dray, find ready sale in competition with the work of the Northern manufacturers, once considered to lay claim to great superiority.

The distribution is mostly confined to the vicinity and near-by parts of neighboring States.

Statement covering the canning and fishing interests of Baltimore.

	Fruit and vegetables.	Oysters and fish.	Total.
Number of firms	120	.....	.....
Capital	$2,455,000	$5,581,342	$8,036,342
Hands	11,695	20,807	32,502
Wages	$1,896,514	$1,685,060	$3,581,574
Value of material	$5,840,005	$4,995,109	$10,835,114
Value of product	$8,791,294	$7,633,132	$16,424,426

The number of hands employed and wages paid are estimated, but the figures are only set down after careful investigation. Of the 20,807 persons engaged many of the shoremen find employment in packing fruit in its season.

The fishermen number 12,484 and the shoremen 8,323.

These two, the fishing and vegetable, which constitute the canning interests, are among the most important of all of our industries.

The population represented by the number of persons who thus find employment equals 75,000, while the wages and earnings of this class exceed $2,000,000 per annum.

The packing business promotes the fishing business, and also stimulates among the farmers the cultivation to rare excellence of specialities, such as sweet corn, tomatoes, peas, beans, and fruits. Probably 50 per cent. of these specialties are destined to this use.

Certain firms pay particular attention to some two or three of these products, and their brands are as well known in foreign countries as at home.

It is estimated that three-fourths of the tin plate imported from England at this point is absorbed by this business, and the number of cans used will aggregate from 80,000,000 to 100,000,000 in number.

In addition to the large consumption in our own country, every quarter and nearly every country of the globe draws upon this market for some one or other of these articles.

No ship sailing to a distant port can complete her stores without regarding these luxuries as necessities. Those engaged in the business are regarded as shrewd and careful operators, and generally the traffic liberally rewards their energetic and painstaking labors.

The shipment of oysters in shell by car-loads to the Western cities during the period between the 1st day of September and the 1st day of April reaches a large figure, only to be conjectured by the constantly increasing demand for the luxury in every quarter and the abundant resources of the Chesapeake Bay and its tributaries.

Stimulated by this demand the greed of the fishers threatens the extermination of the bivalve, whose propagation and growth to perfection, no less than in the case of other created nature, are subject to nature's laws.

So serious are the depredations in this province that this wanton destruction has been the subject of State legislation. Stringent laws have been enacted, with penalties, and a navy established to guard the rights of the State in her waters.

Shad, mackerel, terrapins, and crabs, each in their season, are also important features in this domestic exportation.

Cotton manufactures in Maryland, operated chiefly by Baltimore capital, and whose product is marketed in Baltimore.

Factories	21
Looms	2,469
Spindles	128,514
Hands	4,795

Capital	$5,055,000
Wages	$1,016,000
Bales cotton consumed	82,973
Raw material, cost	$4,476,866
Value of product	$6,302,500

The above comprehensive heading is adopted, notwithstanding the fact that these are statistics of the city of Baltimore, inasmuch as, though the factories are without the city limits, they are within easy distances, owned and operated by Baltimore capitalists, and through these, her merchants, the product is distributed as indicated by what follows:

The character of goods manufactured by the above mills is heavy, the finer grades coming from the New England States, to which section and New York our goods are sent in proportion of about 15 to 20 per cent. Home consumption or the jobbing trade take about 40 per cent.; the balance is taken by the West and South. The heavier goods, such as ducks, are sent to every quarter of the globe, and whiten every sea, as was formerly said of our ships.

The general character of the business is healthy and solid, though the dividends may not be large.

The climate presents advantages to this manufacture. They are subject neither to the extreme heat or cold of other latitudes, where the dog-days of summer and the low temperature of winter affect the fiber and influence the amount of labor, and thus meteorological questions enter in calculations where no item can be overlooked in the competition for profits.

Derangements from these causes have in some cases been estimated to amount to a loss of 20 to 25 per cent.

The imports of manufactured cotton goods for 1883 amounted in value to $245,403, and were taken mostly by the retail trade.

Manufacturers of candy and confections and importers of and wholesale dealers in foreign fruits.

Number of firms	37
Capital	$1,104,234
Hands employed	529
Wages to manufacturing hands	$207,794
Value material and stocks	$1,878,339
Total value manufactured products and foreign fruits	$3,101,334

The above total value of manufactured products and of foreign fruits, aggregating $3,101,334, is allotted as follows: To candy and confections, $1,502,500; foreign and domestic oranges, melons, figs, grapes, raisins, currants, dates, citron, prunes, bananas, pineapples, and cocoanuts, $760,834; fancy groceries, jellies, preserves, canned fruits, vegetables, prepared meats, and shell-fish, $838,000.

The market is well supplied by the irregular but frequent arrivals of cargoes of fruit, &c., from the West Indies and the Mediterranean. Such imports in the year 1883 amounted to $410,834.

California and Florida fruits are in plentiful supply. Candy is of pure quality, the absence of terra alba and other adulterations being a conspicuous feature. The value of sugar used in its manufacture, coming from New York and Philadelphia refineries, annually amounts to half a million of dollars.

Distilleries.

Number	5
Capital	$1,500,000
Hands	150
Wages	$80,000
Product	$2,000,000

The distillers have earned a first-class reputation for their brands of whiskies, and are generally actively engaged.

The quantity distilled during the year 1883 by them amounted to 1,053,088 gallons, as appears by the annexed report of the Commissioner.

This, though indicating a falling off as compared with the product of the three previous years, shows that during the last four or five years, as compared with that of the years from 1874 to 1879, the quantity has doubled itself.

The business has suffered embarrassment from accumulated stocks of old whiskies, and the necessity of their removal from bonded warehouse in cases where the limit of three years has expired.

The distribution is made in the proportion of about 25 per cent. for home consumption, 50 per cent. to the northern markets, and 25 per cent. to the Southern and Southwestern States.

Fiscal year ending June 30—	Distilled spirits other than fruit brandy.	Tax paid on withdrawals for consumption.	Distilled spirits rectified.
	Gallons.	*Dollars.*	*Gallons.*
1874	558,275	346,226 20	.....
1875	399,387	362,615 41	.....
1876	558,997	441,092 63	.....
1877	809,913	783,397 05	.....
1878	681,245	510,985 58	2,797,425
1879	884,705	526,515 36	3,001,255
1880	1,506,572	561,254 48	3,468,[illegible]
1881	2,299,543	472,727 80	3,905,[illegible]
1882	1,608,831	657,686 47	3,870,[illegible]
1883	1,053,088	1,285,639 14	4,178,[illegible]

Manufactures of drugs and chemicals and patent medicines, and wholesale dealers in drugs.

Number	10
Capital and stock	$4,978,[illegible]50
Hands	1,[illegible]3
Wages	$939,[illegible]51
Stock and material	$5,021,5[illegible]2
Product and sales	$10,519,6[illegible]6

It is impossible in this line of business to separate the jobbing and the manufacturing interests. It is preferable to class the above with manufactures.

The total product or sales as compared with the amount represented by materials and wages does not give the idea of profits resulting therefrom, as a very considerable amount of the total would belong to drugs and chemicals jobbed.

The importation of chemicals and drugs during the year 1883 was valued at $1,111,323. English chemicals, carbonate, including sal soda, soda ash, and caustic soda, aggregated 34,306 packages, against 23,276 in 1882, and 28,106 in 1881. There were 14,606 tons brimstone imported in 1883, against 11,633 in 1882, and 14,873 in 1881. Of nitrate of soda imports in 1883 were 36,757 bags, against 28,954 in 1882, and 20,061 in 1881.

These figures bring this branch of business into marked prominence. There are several establishments manufacturing chemicals, such as oil of vitriol, muriatic and nitric acids, sulphate of ammonia, sulphuric acid, epsom and glauber salts, sulphates of soda and iron, saltpeter. Of bichromate of potash, Baltimore boasts the only establishment in America.

These are consumed by the manufacturers of fertilizers and wholesale druggists, and generally are of a quality to render our pharmacists independent of other markets.

Indigenous roots, possessing chemical or medicinal qualities, are consumed in large quantities, and shipped hence to all parts of the world.

Patent medicines figure largely in the above table. Some of these have attained great popularity and are reckoned among the most important of the city's industries.

The proprietors occupy fine warehouses, issue immense quantities of printed matter from their own presses, give employment to hundreds, and send their agents to every quarter of the globe.

The distribution is through the States of Pennsylvania, Maryland, Delaware, the Virginias, the Carolinas, Georgia, Tennessee, and Alabama of drugs; throughout the continent for chemicals, and throughout the world for patent medicines.

Statement of the manufacture of fertilizers in and near Baltimore.

Years.	Establishments.	Capital.	Hands.	Wages.	Material.	Tons of 2,000 pounds.	Value at $20 per ton.
1870	5	$372,500	83	$37,962	$398,344	.....	$476,360
1880	18	3,241,370	661	254,055	2,689,223	214,369	4,287,386
1883	27	4,468,900	1,017	436,629	4,032,284	336,000	6,720,000

The above value of $20 per ton is used merely as affording the best comparison with the years 1870 and 1880, not as a fair average value for 1883.

The actual value of the output of the twenty-seven factories may safely be put down at between $10,000,000 and $12,000,000. The amount of acid phosphate (either South Carolina phosphate crushed and dissolved with sulphuric acid of 47° strength, or a mixture of it with kainit, German salts of potash) reaches probably from 100,000 to 150,000 tons; the quantity of complete fertilizers, that is ammoniated superphosphates, the same amount, while the balance is represented by special compounds of various grades, made by the several establishments, according to formulas furnished by the purchasers. The former (acid phosphates) had an average market value of not less than $16 nor more than $24 per ton, according to the percentage of available phosphoric acid.

The complete fertilizers ranged from $30 to $40 and as high as $50, according to the higher or lower analysis, and the basis of raw materials, while the last-named class averaged about $30 to $36 per ton.

It is impossible to arrive with absolute certainty at the proportions in which the various raw materials entered into the manufacture of these manures. The following figures represent, however, fair approximations:

Domestic supply.—Crude phosphate rock (land and river rock) from the extensive deposits in South Carolina, forms the main ingredient. Its reciepts at this port for the year ending December 31, 1882, amounted to 52,381 tons; during 1883 to 77,656 tons.

Among the sources from which ammonia is principally derived, the first rank is occupied by tankage, ground cracklings, &c., supplied by the large cities, mainly those western towns where large slaughtering houses are located.

The quantity of this received at Baltimore in 1883 is estimated at about 20,000 tons, valued at $500,000. Blood, animal matter, furnished also by slaughter-houses, another source of ammonia, to the extent of about 12,000 tons, representing in 1883 the value of $480,000.

Of bones, crude and ground, there were consumed in 1883 not less than 15,000 tons, valued at about $500,000.

Fish scraps, wet and dry, supplied by the oil fisheries on the Chesapeake Bay, and partly from Delaware and Long Island Sound, were consumed during the same time in Baltimore to the extent of about 12,000 tons, valued at about $350,000.

Bone black, from sugar and glucose refineries, also entered into this manufacture to the amount of 4,000 or 5,000 tons, valued at from $75,000 to $100,000.

To this quantity must be added the natural guanos from islands, rocks, and keys appertaining to the United States, estimated (including Navassa Island phosphates) at 16,000 tons, and representing a value of about $200,000.

FOREIGN SUPPLY.

Statement showing the imports into the United States of sulphur or brimstone, crude nitrate of soda, acetate, sulphate, phosphate, and all other salts of soda, guano, bones and bone dust, and all other fertilizers, etc., during the nine months ending March 31, 1883 (*according to report of Joseph Nimmo, jr.*).

Articles.	Quantity.	Value.
Bones and bone dust		$293,315
Chloride of lime.....pounds..	71,131,972	669,687
Gypsum or plaster of Paris, unground.....tons..	111,444	111,261
Guano:		
From bonded islands.....do....	15,790	379,578
From foreign countries.....do....	5,263	61,510
Soda:		
Nitrate of.....pounds..	75,123,018	1,514,359
Acetate, sulphate, phosphate, and all other salts of.....do....	7,210,416	49,619
Sulphur or brimstone, crude.....tons..	76,484	1,888,819
All other fertilizers, etc		679,765
Total		5,647,913

The actual receipts in Baltimore of brimstone during 1883 were, from foreign ports, 16,175, and from American ports, 1,200; total, 17,375 tons, valued at $434,375. Of nitrate of soda, 3,398,700 pounds, valued at $78,170; and of kainit, 32,497 tons, valued at $194,982.

Of the total quantity of raw materials entering into the manufacture of fertilizers and imported from foreign countries the market of Baltimore consumes fully 30 per cent.

Direction of movement during the season of 1882–'83, *as per report of secretary of the National Fertilizer Association.*

States.	Traceable.	Estimated.	States.	Traceable.	Estimated.
	Tons.	*Tons.*		*Tons.*	*Tons.*
New York	2,945	30,000	Louisiana	491	5,000
New Jersey	21,113	35,000	Tennessee	3,882	10,000
Delaware	4,744	10,000	Missouri	100	5,000
Pennsylvania	49,658	80,000	Illinois	102	5,000
Maryland	59,865	80,000	Michigan	450	5,000
The Virginias	79,216	80,000	Kentucky	120	6,000
North Carolina	90,537	90,000	Indiana	27	8,000
South Carolina	108,656	90,000	District of Columbia	14	
Georgia	139,698	125,000	New England States		60,000
Florida	1,883	5,000	Other Western States		28,000
Alabama	35,924	45,000			
Mississippi	2,582	20,000	Total	604,470	840,000
Ohio	2,463	20,000			

The difference between the traceable and actual or estimated consumption arises from the fact that the latter includes the English manures brought to the United States and the product of all factories whose output has not been traced by railroad statistics.

Looking at the development of this business within the few years that have passed since its inception, the facilities brought by the skill of the chemist to bear upon its future, the fact that the débris of centuries past are found in beds which may be termed fields, that the merest refuse which formerly found its way through the gutter, only to breed poison and engender disease, can now be utilized as an ingredient of an article prominent in commerce and of vital importance to agriculture, is sent abroad to every quarter to act as an effective and powerful remedial agent in quickening sterile soils and giving renewed youth to overworked fields—when all this is considered, it would appear that the fertilizer manufacture in the future might be capable of an expansion almost boundless.

Every part of the country presents sections of waste, sterile, overworked soils, where a demand must arise, and where this want is already felt it must increase, while new tracts will, through the application of fertilizers, invite occupancy and increase of acreage.

The store of material, supplied without stint, brought up from the depths of the earth, and the gleanings supplied, both by the practice of economy and the lack of it, to be had for the trouble of receiving and classifying, the presumed profit that is offered to the investor, with the enterprise that is never lacking; these considerations assure for the business an importance that will far eclipse that gained for it during the last decade.

In this growth Baltimore must participate, her position, viewed with reference to the ocean or the prairie, enabling her to avail herself of every avenue for the collection of material and for the distribution of the manufactured compound.

In this connection it may be worth while mentioning that the arable acreage of the United States, if manured as intensely as is done in the countries that stand highest as regards agricultural progress, namely, Belgium, Holland, England, parts of Germany, &c., would require between 9,000,000 and 10,000,000 tons of manures, instead of the 900,000 which are not quite consumed at present.

The future of the industry contains, therefore, the promise of a ten-fold expansion.

(The data regarding this line of trade has been revised and partly furnished by the Chemical and Fertilizer Exchange of Baltimore and partly by the National Fertilizer Association.)

Furniture (manufactures and wholesale dealers).

Number	73
Capital	$825,600
Hands	1,550
Wages	$890,000
Value of material	$1,386,660
Value of product and sales	$3,246,000

The total amount of product or sales, as above indicated, when compared with the value of material added to the wages paid, does not represent the profits made, as a large amount is represented by sales made through jobbing houses, which cannot be separated from the manufactures.

Source of supply.—Walnut comes principally from Ohio, Indiana, and West Virginia,

› best quality is from East Tennessee, and considerable quantities from that of Louisiana which is drained by the Red River.
e pine is the growth of the forests of the Pennsylvania and the New England

ır comes from almost every timber-growing section, but chiefly from south-ı parts of Virginia and West Virginia.
:omes from Ohio, Indiana, West Virginia, and Tennessee.
ry: The best from Pennsylvania, but chiefly from the Western States.
Chiefly from the Western States, but the best from Tennessee.
e: The best from Western and a small portion from Southern States.
›gany: From Mexico, the West Indies, Spanish Main, and Central America.
wood: From South America.
ibution.—In the medium and cheaper grades of the manufacture, white pine plar woods, the South takes the largest quantity, although the value is but o 27 per cent.
alnut, ash, cherry, maple, and oak goods, our manufactures find extensive ls from hotels and for public buildings, for Federal, State, and municipal use, ıted to the important centers throughout the country, equaling about 23 per ı value.
›gany and rosewood made up for home use amount to about 18 per cent.
remainder, say 32 per cent., including all the hard woods, and the most costly, ıtributed in home use and the States of Maryland, Viginia, West Virginia, ·lvania, and North Carolina.
›ugh New York, New England, and Michigan furnish the market to the amount ıt $250,000 yearly, it is claimed that our position, favorable to the receipt of · from every quarter, the cheapness of unskilled and skilled labor, fill the com- necessary for rendering this one of the best markets for these goods in the y.
y style of furniture, from the richest designs for drawing-rooms, chambers, fices to the less pretentious cabinet, is manufactured in Baltimore with ele- and skill. Those engaged in the business have produced effects unequaled, ere are few cities in the country where the craft has reached so high a standard. furniture imported is exceedingly limited in quantity, and consists only of ts and what is made of inlaid woods of all kinds.

Glass manufactures (windows, bottles, jars).

r establishments	13
l	$1,025,200
	1,425
	$485,000
of materials	$791,324
t	$1,683,200

ce of supply: Coal, wood, lumber, marl, sand, lime, and pot clay, constituting cent. of the value of material used, are to be had at home. Soda ash, imported ngland, aggregates 4,300 tons per annum, and is valued at about $150,000, or naining 20 per cent. Quantities of irons and nails are also consumed.
·ibution: Maryland and Delaware, 15 per cent.; Northern and Middle States, cent.; Western States, 25 per cent.; and Southern States, 40 per cent.
mental glass for windows is quite a feature in the business, and to a limited table ware is made. The trade is growing, is in energetic hands, and with fuel, and no facility denied, there is good reason for the best results in the fu-

n furnaces produce 210,000 boxes window glass, and six yield about 8,500 tons num, in jars, demijohns, bottles, flasks, &c.

Hair and bristles (curled hair and brushes).

ır	20
l	$1,111,560
	822
	$560,600
of material	$1,500,000
:t	$2,715,320

largest establishment for the manufacture of curled hair in the United States has ı existence here since 1836, giving employment to 700 hands, and turning out to 50,000 pounds manufactured goods per week. This product is regarded with

the highest favor in all markets, both for its excellence and modest price, by the leading upholsterers in the country. Large quantities are also exported, which amounted in value, in 1883, to $159,059. The raw material comes from the West mainly, also from the northern parts of Europe, and from South America, where the animals are not slaughtered till mature growth, and the bristles have more body than those obtained here. The climate also operates favorably.

The brushes for ordinary use are made of feathers, bristles, hemp, tampico, the latter from Central America; the business is increasing rapidly, having, in some cases, increased by six or eight times itself within a few years.

In time the higher grades of toilet articles will be taken up, such as are now the exclusive manufacture of the Northern States.

Hardware and file manufactures.

Number	8
Capital	$195,000
Hands	385
Wages	$146,000
Product	$575,000

The manufacture of hardware, except files, is of recent date.

The articles consist of horse and mule shoes, files, ice creepers, egg beaters, fine cleaners, and the numerous labor-saving articles useful in handling, preserving, and canning fruit.

The raw material is obtained here, and the distribution is to all the Western and Southern States.

Looking-glass, picture-frame, and show-case manufactures.

Number	4
Capital	$190,00
Hands	28
Wages	$138,30
Material	$256,26
Product	$610,59

Our own market supplies the raw materials to the extent of 50 per cent. New York, New Jersey, and New England, 20 per cent., and Western States, 30 per cent.

The distribution is to Maryland, Virginia, Pennsylvania, Delaware, West Virginia, the Carolinas, Georgia, Tennessee, Alabama, and Mississippi. During the last three years the business has increased 50 per cent.

MACHINERY AND FOUNDRIES.

Iron and steel foundries, ornamental iron works, bell and brass casters, boilers and mechanical appliances, Baltimore and Baltimore County.

Number	92
Capital	$4,528,029
Hands	4,591
Wages	$2,398,613
Value material	$6,953,940
Product	$10,369,452

Stoves and stove ware and steam heating.

Number	88
Capital	$1,317,000
Hands	1,760
Wages	$875,100
Value material	$1,889,000
Product	$3,475,000

TOTAL.

Manufactures of iron and steel	$10,369,452
Manufactures steam and steam-heating apparatus	3,475,000
Imports of iron and steel	2,431,953
	16,276,405

Imports of iron and steel (manufactured and unmanufactured).

Years.	Value.	Years.	Value.
1873	$1,605,814	1879	$122,560
1874	1,454,519	1880	4,460,059
1875	756,774	1881	1,866,319
1876	496,152	1882	2,186,377
1877	280,693	1883	2,431,953
1878	144,059		

Imports of iron and steel at Baltimore for three years.

Articles.	1880.	1881.	1882.
Pig.....tons..	70,130	51,434	51,424
Rail.....do....	34,476	10,078	5,784
Rail.....pieces..	76,649	30,210	10,425
Rail, steel.....tons..	550	2,690	1,559
Rail.....pieces..	37,562	7,688	5,099
Steel blooms.....number..	.....	18,673	2,689
Steel.....tons..	.....	1,748	3,170
Steel, scrap.....do....	4,729	3,587	699
Iron, scrap.....do....	13,611	968	2,855
Iron ore.....do....	179,277	353,746	239,127

Production of pig iron in Baltimore—1875 *to* 1883.

Years.	Baltimore.	Maryland.
	Tons.	*Tons.*
1875	15,630	38,741
1876	13,184	19,876
1877	14,394	26,959
1878	16,211	24,027
1879	15,937	37,237
1880	23,649	61,437
1881	17,967	48,756
1882	24,462	54,524
1883	5,364*	18,537

* First six months.

There are improvements contemplated that will increase the output of this business and there is also a large furnace to be constructed at Curtiss's Creek, in the harbor.

The imports of steel bars and sheets for the year 1883 amounted to $1,153,137, transshipped, through Baltimore, without appraisement, while the imports of steel ingots, for the same year, amounted to 144,942,084 pounds, valued at $1,070,934.

The pig-iron imported is from England and Scotland, with small quantities from the Mediterranean, and from some of the nearer Western States, while the ore is almost exclusively from the Mediterranean.

Considerable quantities of ore are found in our own State, and the quality is considered superior to that coming from any other quarter.

Steelton, Johnstown, and Pittsburgh receive largely of these importations through this port. The importation of pig-iron, transshipped through Baltimore, without appraisement, during the year 1883, amounted to 14,683,201 pounds, the greater portion destined to Pittsburgh, and a small portion to Ohio. These importations are materially affected by the late increase of duty.

For the works at this point the material is furnished in about these proportions: Iron, Maryland and Pennsylvania 49 per cent., and Virginia, West Virginia, Ohio, and Alabama about 21 per cent.; moldings, from New York, 8 per cent.; coal and coke, from Maryland and Pennsylvania, 12 per cent.; lumber, from Maryland, Pennsylvania, Michigan, and Indiana, 10 per cent. Steel comes to us from New Jersey and Pennsylvania—very little imported being used by these iron workers.

Distribution: Turbine water-wheels, boilers, engines, pulleys, shaftings, crushers, car-wheels, saw and grist mill machinery, hydraulic presses, machinery for the distribution and transmission of power, brass bells, and all the products of brass foun-

dries are shipped in every direction, to every State and Territory and to Mexico, wherever such machinery is needed, throughout the whole extent of territory south of the British dominions.

The greater percentage, however, is shipped to New York and New England.

Architectural fronts, steam-heating apparatus, iron bridges, plate-iron, railings, ornamental work, chairs, stoves, furnaces, culinary implements, and safes are distributed so generally, as by inquiry, it is hard to indicate what one section of the country more than any other contributes to the success of this valued industry.

Our establishments have gained great celebrity in constructing heating apparatus for stores, libraries, churches, and theaters throughout the States, and in many of the public buildings erected by the United States Government in Washington, and in every section of the country for State and city governments.

Millers, flour and grist.

Number	12
Capital	$1,072,000
Hands	196
Wages	$90,530
Material	$2,644,100
Product	$3,255,000

Production of the city mills from 1879 to 1883 inclusive.

	Barrels.
1879	411,316
1880	456,568
1881	407,578
1882	459,505
1883	473,6[illegible]

Quantity of wheat ground, 2,134,000 bushels, valued at $2.344,100. Quantity of co[illegible] used for the manufacture of hominy, 500,000 bushels, valued at $300,000.

The flour is mainly made from wheat grown in Maryland, Pennsylvania, and Vi[illegible] ginia, which includes the water-borne from the Chesapeake Bay and its tributaries only a small portion coming from the West.

Our millers have, to a great extent, adopted the "new process" introduced into th[illegible] manufacture by the Western manufacturers, forced upon them by the favor which th[illegible] Western flour has gained by this system, for itself. With this innovation has bee[illegible] dispelled the delusion that none but our local brands were suited to tropical countries, which, once true, gained for them a reputation now justly claimed for the productions of the recent method.

The pearl hominy manufactured here is of fine quality and is in great demand.

Marble and stone work.

Number	45
Capital	$930,422
Hands	1,689
Wages	$634,971
Value of product	$1,891,340

Besides, for the extensive use, for interior work and cemetery purposes, of the Italian and the many varieties from other States, the marble of our own quarries, particularly that known as the Beaver Dam quarries at Cockeysville, a few miles distant, is of a fine quality, and in demand for building purposes. The Washington Monument in this city, the city hall, and the monolithic columns of the national Capitol are of this description.

Since the height of 150 feet was attained on the National Monument at Washington to its present elevation of 460 feet, this marble has been used and probably will be used to finish the elevation and cap the structure.

Maltsters and brewers.

Number	35
Capital	$2,372,000
Hands	475
Wages	$231,300
Value of material	$1,450,000
Product	$2,313,250

The grain used for these purposes is furnished by our own State, Virginia, and the West.

The business is in good condition, without having attained for any one great reputation. There were received at this port 731,407 bushels of malt. The distribution is mainly domestic, such markets as would naturally seek this taking in proportions, Maryland and Delaware 35 per cent., West Virginia and Pennsylvania 25 per cent., Virginia 18 per cent., North Carolina, South Carolina, and Tennessee 22 per cent.

The ale, porter, and beer are of fine quality, largely consumed at home and by the surrounding cities and towns, coming in close competition with similar beverages from every part of the North and West.

Tonics and extracts, in considerable quantities, for medicinal use, are in favor with the druggists.

Paints and oils (manufacturers and wholesale dealers).

Number	48
Capital	$1,620,000
Hands	340
Wages	$243,200
Sales or product	$4,205,500

In the above the white lead (and it is of fine quality) is furnished by Baltimore manufacturers.

Flax-seed oil comes from the West. The colors are produced, to a great extent, from the natural products of our own soil, drawn from every quarter of the country. Large quantities of colors come from the North and East, and our own establishments produce these in great quantities and variety for domestic use and export, of most excellent quality. Varnishes for coach, leather, and furniture, also Damar varnishes are made here. The neighborhood of Baltimore is rich in chrome; and the chrome-yellow that is extensively manufactured from it is not equaled for quality in any quarter of the world.

Besides a large export demand from all countries, the trade in this article for the South American markets is practically monopolized by Baltimore.

Distribution may be stated in the proportion of 25 per cent. for Maryland, 15 per cent. Delaware and Pennsylvania, 13 per cent. to the Virginias, 10 per cent. to the Carolinas, Tennessee, and Georgia, 19 per cent. to the Western States, and 18 per cent. to South America.

Pianos, organs, musical instruments, and materials.

Number	13
Capital	$1,000,000
Employés	653
Wages	$550,000
Value of material	$552,631
Value of products	$1,400,000

Among the firms engaged in the above branches there are manufacturers of pianos whose instruments have received the highest commendation from the most eminent sources.

Disclaiming any presumption to pre-eminence, Baltimore skill has acquired a reputation acknowledged from the highest quarters, and which has not failed to secure her sale in markets where competition is briskest, from which we are apt, without distrusting our own opinions, to look for favorable consideration.

Among these manufacturers of distinction in the United States, whose name is not legion, Baltimore makers stand indisputably in the front rank. Through foreign expositions and the amiable attachment of our own people resident abroad to home institutions, these manufacturers have established such a reputation in England and upon the continent that the exportation thither of these articles is of common occurence.

The annual production of pianos is from 2,400 to 2,500.

Potteries (stone and earthen ware).

Number	7
Capital	$377,000
Hands	424
Wages	$173,020
Materials	$288,500
Product	$704,000

The potteries in this city, for the most part, manufacture the rude and homely articles for the farm, the dairy, and ordinary household use.

One or two firms aspire to wares of higher grade, and with the employment of skilled artificers in the ceramic art, the use of the best models, encouraged by the extraordinary development of public taste for decorative art, they produce articles known as majolica and the various other styles formerly known to us as of foreign workmanship in a style that, in the opinion of good judges, threatens to displace foreign manufactures to a great extent.

This progress is not limited to the production of useful and necessary ornamental forms, but is exhibited, not only in the reproducing of acknowledged masterpieces, but in original designs of plastic art that justly may lay claim to great beauty and excellence. The home and Northern markets take up these products to the extent, probably, of 50 per cent., the South 30 per cent., and the West 20 per cent. Much of the nice ornamenting of stems and rods for chandeliers and stand lamps goes to the manufacturers of brass goods in the New England States, notwithstanding the great attention this branch of art receives in that section.

Printing, lithography, and publishing.

Number	56
Capital	$2,131,300
Hands	999
Wages	$670,761
Value of material	$755,703
Value of product	$2,157,134

For supply, the ink, much of the stone, the photography, much of the machinery, paper, and type are from our own city and State.

The costly presses and ornamental type are mostly from the Northern States, principally New York. Stone and bronze, to a certain extent, are from Germany. The paper is of our own manufacture, but the higher grades and special kinds are chiefly from Pennsylvania, New Jersey, New York, Connecticut, and Massachusetts. India paper comes from China. Many of the other appliances are the manufacture of Maryland, New York, and New England.

The distribution is mainly in the Middle and Southwestern States, about equally, with a limited amount to the Territories and Pacific States. Very fine ornamental and colored work has been produced, particularly in lithography, while the general character of the work is up to the standard of excellence.

Soap and candles.

Number	4
Capital	$500,000
Hands	110
Wages	$64,729
Material	$550,466
Product	$760,000

This business has now come within control of a few firms who are energetic and conservative. Notwithstanding the figures are not large, the increase in manufacture since the census of 1880 has been equal to 50 per cent., and though every market sends its products here, our soaps are distributed throughout the States to the South and to the West as far as California. The convenience and cheapness of coal oil has reduced the candle to very limited uses. This, together with the general consumption of gas, has caused the demand for export to the islands and remote countries to very nearly cease.

For materials, the rosin comes from the South, the chemicals from England, while the tallow is obtained in abundance from our butchers and hide and tallow associations.

Saddlery, collars, harness, and whips, trunks and valises (manufacturers and dealers).

Number	89
Capital	$355,774
Hands	650
Wages	$264,415
Material	$462,902
Product	$1,018,207

For supply in the above industry, the leather furnished by home manufacturers equals one-third of the whole value of all articles. New York supplies trunks and valises. New York State, New England, and New Jersey supply about two-thirds entire value, consisting of saddlery, hardware, bits, hames, hooks, turrets, &c.

These goods are distributed in the proportion of one-third in this State, Delaware, Virginia, Tennessee, West Virginia, and Pennsylvania, and two-thirds to North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, and Texas. Light expenses are claimed as well as good work in the manufacture.

Shot manufacturers.

Number	2
Capital	$350,000
Hands	31
Wages	$24,180
Product	$609,375

At present the product is not over 375,000 bags, or 9,375,000 pounds, but the capacity of the Merchants' Tower alone is said to be 1,200,000 bags, or 30,000,000 pounds, per annum.

Refined lead is obtained from Chicago and crude from the Western mining States and Territories. The distribution is mainly confined to the Southern and near Western States, as an agreement exists between the manufacturers in the United States to allot to each a distinctive area, according to their relative location. The principal shot tower, the Merchants', is said to make the most perfect drop-shot in the world. It rests upon solid rock and is 217 feet high, which gives it the rare and important advantage of being absolutely free from vibration.

Sashes, doors, and blinds (manufacturers and dealers).

Number	15
Capital	$587,000
Hands	655
Wages	$316,851
Value of material	$556,855
Sales or products	$1,136,250

A large portion of these goods comes from the Western States, and the general character is of low grade. The Baltimore work ranks higher. The business has to contend against odds, with lumber more readily obtained in the West; the freight on raw material is saved to manufacturers there, and the competition thence is sharp in this market.

To the remotest west and south, for State, municipal, and Federal buildings, Baltimore fairly holds its own for interior work, and obtains a considerable share of it. The business may be said to be healthy, pushed with energy, and on the increase.

Ship-building.

Number	67
Capital	$1,350,000
Hands	1,000
Wages	$650,000
Materials	$885,000
Product	$1,850,000

A considerable increase is noted (by the table which follows) between the years 1880 and 1883, which is comprised almost entirely of steam tugs of small size, but great power for towing within the harbor and out to the capes vessels of every size; in the occasional building of steamboats of moderate size for river and bay navigation; also in the continual building of the graceful sailing craft intended for inland carriage on the many rivers and creeks and the shores of the Chesapeake Bay.

During the year 1883 two sailing vessels of more pretension, destined for ocean traffic, have been built and dispatched to foreign ports.

There is every facility for the fitting up and repairing of vessels, steam or sail, with docks suitable for every description, the principal one being 260 feet in length.

In addition, a graving dock of 470 feet length accommodates vessels of a large class, and is considered adequate to the requirements of the port.

Number of steam and sailing vessels constructed in Baltimore during the years 1875 *to* 1883.

Year.	Sailing vessels.		Steam vessels.		Canal boats.		Barges.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
1875	20	1,658.61	2	56.43	.....	.....	.....	.....	22	1,715.04
1876	27	1,861.09	3	1,321.70	1	105.66	.....	.....	31	3,288.45
1877	20	667.56	2	140.69	.....	.....	.....	.....	22	808.25
1878	17	994.50	6	437.14	.....	.....	1	102.71	24	1,534.35
1879	16	871.02	7	1,003.69	.....	.....	1	102.71	24	1,977.42
1880	15	178.56	7	221.94	.....	.....	1	49.95	23	445.15
1881	21	821.34	4	488.38	.....	.....	.....	.....	25	1,309.72
1882	42	1,234.69	11	2,378.94	.....	.....	.....	.....	53	3,613.63
1883	46	2,105.49	6	1,358.90	.....	.....	.....	.....	52	3,464.39

Shirt, underwear, and overalls, &c. (manufactures).

Number	31
Capital	$930,000
Hands	5,400
Wages	$1,016,000
Materials	$1,258,000
Product or total sales	$3,540,000

The above is a most active industry. Skillful hands and the merest novice alike find ready employment. The poorest, driven to want, can find at least temporary relief. The business is not subject to interruption, and in several cases the establishments rank as factories, and the routine is regular and unvarying. The Troy manufacturers, considered as almost monopolists for the articles of gentlemen's wear, have here found worthy competitors. For an article suitable for laborers a business has grown to large proportions. Two or three establishments are operated for the manufacture of ladies' underwear of every description, in which the business is conducted in the most thorough manner, and ingenuity and taste taxed in catering to feminine fancies.

These branches, enumerated above, have gradually gained such prominence that they are dependent upon no section for their consumption, and furnish equally the Northern and the Western markets.

For shirts, the supply of linen is entirely from abroad, consisting of about one-eighth of the value; the cotton for these and the other articles of domestic production are almost exclusively from Northern looms. In these three branches of industry the value of domestic material will be five-eighths of the whole.

The balance, or one-eighth of the value used in the articles of female apparel, consists of edgings, insertings, ruchings, &c., imported, for the most part they are of French, Swiss, and German manufacture.

The shirts and overalls are mostly disposed of in the direction of that of the jobbing dry-goods trade, while the New York market draws largely on the department of female apparel, and for the rest, the distribution is about equal in every other quarter of the States and Territories.

Tin, copper, and sheet-iron ware (manufactures).

Number	96
Capital	$1,174,063
Hands	1,950
Wages	$629,928
Material	$2,925,150
Product	$4,030,000

Importers and jobbers of tin plate.

Number	8
Capital	$1,150,000
Value of imports	$1,962,065
Total	$5,992,065

Importations of tin plate.

874	$1,454,519
875	756,774
876	469,152
877	280,693
878	144,057
879	122,560
880	4,460,059
881	1,431,816
882	1,345,342
883	1,962,065

The tin interest is one of the largest branches of our commerce, contributing to the ost important of our manufactures. It employs large capital in providing for the ousand and one uses made of the article. About eight firms, with a capital of 1,150,000, import the greater part of the plate.

The canning business, so prominent a feature of our commerce, consumes quanti- es that may be estimated from 80,000,000 to 100,000,000 of cans of various sizes to ntain the fruits, vegetables, and fish annually preserved here, and sent to every art of the country and of the world.

A "corner" in tin might not be so serious a matter in our households, but would rely be felt by every miner and backwoodsman in every land, as affecting very nsiderably the price of such food essential to those isolated classes.

The counties of Maryland are also largely engaged in the packing of fruits, vege- bles, and oysters, so that the demand is constant and the area of manufacturing creasing.

For roofing purposes, to which tin is largely devoted, and the manufacture of house- old articles, the consumption increases with the city's growth.

The articles distributed by the merchants and manufacturers in tin wares are sent roughout Maryland, Pennsylvania, the Virginias, and the Southern States generally.

Tobacco manufactures—chewing and smoking, cigars, cigarettes, and snuff.

umber	352
apital	$1,404,000
ands	3,207
ages	$868,436
alue material	$3,627,000
alue product	$5,868,750

The amount of material used during the year 1883, is as follows:

	Pounds.
af, scraps, and stems, for smoking, plug, fine-cut, and snuff	9,234,668
icorice, sugar, and other material	845,641
af for cigars and cigarettes	2,066,000
Total	12,146,309
alued at	$3,627,000

The tobacco taken by these manufacturers during 1883 amounted to 11,300 hogs- ads. or 11,300,668 pounds.

The source of supply is about in these proportions:

	Per cent.
irginia and North Carolina	53
aryland, Ohio, and Kentucky	20
ennsylvania, Connecticut, and Wisconsin (for cigars)	15
icorice, sugar, and other material from Baltimore	2
uban and other imported tobacco	10

Distribution:

	Per cent.
estern and Northwestern States and California	53
ennsylvania, New York, and New England	27
outhern States	20

The increase in smoking manufactured tobacco since 1880 has been about 45 per ent.; cigars 25 per cent.; cigarettes 66 per cent., owing to a natural increase of con- mption, and not, as alleged by some, to a reduction of tax, since such changes have disturbing influence, usually counteracted, in part, by anticipating the effect during heir agitation and by keeping stocks at the lowest possible point.

The standard of product, specially in granulated tobacco, is very high, a gain in this espect of what has been *lost* by other States.

Statement of tobacco and snuff manufactured and sold and removed in bond for export in the third district of Maryland (now district of Maryland) from 1874 to 1883, both included.

Years.	Plug tobacco.	Smoking tobacco.	Fine-cut chewing tobacco.	Snuff.	Removed in bond for export.			
					Plug tobacco.	Smoking tobacco.	Fine-cut chewing tobacco.	Snuff.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
1874	.....	3,011,383⅝	185,465	348,152½	.....	8,979	.....	227½
1875	.....	3,324,381½	153,645	323,047	.....	16,712	.....	604
1876	.....	3,381,680½	149,362	280,978½	.....	7,132	.....	72
1877	.....	3,326,008⅝	136,056	280,552½	.....	9,564	.....	1,455
1878	24,850½	4,000,582⅝	123,426	270,286½	21,244½	15,009	611	2,380
1879	56,593½	3,293,270⅞	136,404	283,583½	49,601½	10,745	235	600
1880	38,101½	4,395,504⅞	150,551	317,594½	14,315½	13,778½	.....	100
1881	183,802	4,915,836⅞	185,329	350,001½	12,920	22,825	231	912
1882	80,967½	4,845,920½	140,784	350,871½	.....	10,998	150	.....
1883	16,023½	6,205,857⅞	161,131	382,119½	.....	12,363	287	930

The above table shows an increase in smoking tobacco for ten years, from 1874 to 1883, of 100 per cent., and in the same period snuff has increased 10 per cent. Fine-cut, excepting 1874, has gained.

Statement of the number of cigars and cigarettes manufactured and sold and removed in bond for export in third district of Maryland (now district of Maryland), 1873 to 1883, both years inclusive.

Years.	Cigars.	Cigarettes.	Removed in bond for export.	
			Cigars.	Cigarettes.
1873	37,619,050	.....	.....	.....
1874	33,990,525	.....	.....	.....
1875	35,307,500	2,335,550	.....	.....
1876	43,282,950	6,096,450	.....	.....
1877	47,618,750	10,038,400	.....	.....
1878	48,675,400	13,693,000	.....	758,000
1879	53,595,775	24,648,750	.....	97,500
1880	63,925,000	45,750,590	30,000	841,200
1881	69,175,600	30,499,810	52,400	846,500
1882	71,906,675	30,243,330	34,000	1,611,000
1883	79,965,430	75,913,335	56,000	185,000

Remarks.—Tax on cigars, $5 per M; cigarettes, $1.50 per M; to March 3, 1875. Tax on cigars, $6 per M; cigarettes, $1.75 per M; from March 3 to May 1, 1883. Tax on cigars, $3 per M; cigarettes, 50 cents per M; from May 1, 1883. Prior to 1875 the third district of Maryland was composed of the twelve upper wards of Baltimore City. In 1875 the old fifth district (including part of Baltimore, Howard, Anne Arundel, Prince George, Calvert, Charles, Montgomery, and Saint Mary's Counties) was consolidated with third district. The old second district, the lower eight wards of Baltimore City, part of Baltimore and Harford Counties was consolidated with third district in 1876. District of Columbia was also consolidated with third district of Maryland, but no account of that part of district is included in this statement. The old fourth district, Carroll, Washington, Frederick, Alleghany, and Garrett Counties, was consolidated with third district of Marylandi n 1883, but no account of that part of district is included in this statement.

By the above table in the eleven years, from 1873 to 1883, cigars have gained over 100 per cent., and cigarettes in the nine years, from 1875 to 1883, have increased from 2,000,000 to 76,000,000, and in the period between 1881 and 1883 have doubled.

Woolen manufactures in Maryland operated chiefly by Baltimore capital and whose product is marketed in Baltimore.

Looms	130
Hands	382
Capital	$475,600
Wages	$94,560
Pounds consumed	1,048,000
Cost of raw material	$518,055
Value of product	$723,902

The character of these manufactures is heavy and coarse, for commonest uses. They are consumed chiefly in the South, probably in the proportion of 60 per cent. to 40 per cent. for home and the Western States. With few exceptions the business is a prosperous one. One concern in particular, the Ashland, has often orders for months in advance of production.

The census report of 1880 was based entirely upon this mill, although it would appear to give statistics of the other fourteen in operation at that time. The imports of wool amounted in 1883 to $269,942.

Recapitulation of productive interests.

Branch of manufactures.	Value.	Branch of manufactures.	Value.
Agricultural implements	$550,000	Marble and stone work	$1,891,340
Boots and shoes	2,655,560	Maltsters and brewers	2,313,250
Bricks and tiles	1,084,921	Paints and oils	4,205,500
Bread and steam bakeries	1,550,000	Pianos, organs, &c	1,400,000
Clothiers	12 002,000	Potteries, stone and earthen ware	554,000
Carriage, coach and wagon manufactures	905,650	Printing, lithographing, and publishing	2,157,134
Canning and fishing	16,424,546	Soap and candles	760,000
Cotton manufactures	6,302,500	Saddlery, harness, and whips	1,018,207
Candy, confectionery, and fruits	3,101,334	Sashes, doors, and blinds	1,136,250
Distilleries	2,000,000	Ship building	1,850,000
Drugs, chemicals, and patent medicines	10,519,618	Shirts, underwear, and overalls	3,540,000
Fertilizers	6,720,000	Shot	609,375
Furniture	3,246,000	Tin, copper, and sheet-iron	5,992,065
Glass	1,683,200	Tobacco	5,868,750
Hardware	575,000	Woolen	651,079
Hair	2,715,320	Total productive trade	126,124,604
Looking-glass and picture frames	610,590	Total distributive trade for 1881-'82	245,469,699
Machinery and foundries	16,276,415		371,594,303
Millers	3,255,000		

REVIEW OF THE PRODUCTIVE COMMERCE OF BALTIMORE, VIEWED IN ITS COMPETITIVE AND DISTRIBUTIVE ASPECTS.

From the preceding review of the industrial commerce of Baltimore it may be seen that the diversity of its manufactures makes it a market of original supply.

The industrial interest of the city may, from time to time, by a combination of circumstances, become arrested in their development, but this cannot be of long continuance. The entire surroundings are favorable to its rapid advancement and ultimate importance of a manufacturing city, and probable supremacy as a central productive port on the Atlantic seaboard.

No doubt this advance will be recognized in the future as having proceeded from commerce, hand in hand, with manufactures.

This element may be divided into two classes.

Class 1.

Of the articles herein comprised it may be said that their distribution is general throughout the States and Territories and to portions of the English dominions and to Mexico; also, in several articles, there exists a considerable demand for exportation, as in hair, canned goods, cotton duck, drugs, and patent medicines—the latter three reaching all parts of the world.

These wares, previously spoken of in detail under their respective headings, consist of manufactures of iron (machinery, iron fronts, heating apparatuses, &c.), cotton and woolen manufactures, clothing, shirts and underwear, boots and shoes, curled hair, furniture, fertilizers, tobaccos, hardware, bricks, tiles, potteries and stone wear, glass, pianos, distilled spirits, printing and lithography, canned fruits, vegetables and fish, drugs, chemicals, and patent medicines.

Competition in these branches proceeds from different quarters, as follows: Iron goods, both east and west; cotton and woolen goods, New England and New York, and in the low grades from the South; clothing, New York, and to a limited extent, the west; shirts and underwear, New York; boots and shoes, New England; furniture, the east and west; fertilizers, Massachusetts, Long Island, New Jersey, Pennsylvania, and, in recent years, from South Carolina; tobacco, New York and the west; hardware, the east and west; glass, Pittsburgh; pianos, New York and Boston; spirits,

from the west; canned goods, principally the Middle States, with some from the west; drugs, chemicals, and patent medicines, from Philadelphia, New York, and Boston, in the east, and from Chicago, Cincinnati, and Saint Louis, in the west.

Class 2.

This class, compared with the first, is more circumscribed in its limits—certain conditions as distance, time, and rates of freight excluding participation in certain lines of manufacture and trade through distant sections of the West. The area, therefore, lies within the States of Maryland, Delaware, Pennsylvania, the Virginias, the Carolinas, Georgia, Tennessee, and Alabama.

For the articles of flour and bread, paints, agricultural implements, and shot there is a certain demand for exportation to South American ports.

The wares thus distributed in the States above enumerated consist of agricultural implements, bread, breadstuffs (products of bakeries and milling), malt and products of breweries, marble and stone, paints and oils, soap and candles, saddlery, shot, sashes, doors and blinds, tin, copper, and sheet iron, and carriages.

Competition in these branches, proceeds as follows:

Agricultural implements: Ohio, Indiana, and New York. Bread: Cincinnati and Saint Louis. Malt and beer: New York, Pennsylvania, Ohio and Wisconsin. Paints and oils: the East and West. Soap and candles: Cincinnati, Chicago, Saint Louis, New York, and Philadelphia. Saddlery: New Jersey, New York, New England, Cincinnati, and Saint Louis. Shot: Boston, New York, Philadelphia, Saint Louis, Cincinnati, and Chicago. Sashes, doors, and blinds: Ohio, and Indiana. Tin, copper, and sheet iron, from New York and Boston.

The commodities distributed during 1883, exclusively of Baltimore manufacture, by all avenues, amounted to 2,059,881,354 pounds, or over 1,000,000 tons, as follows:

	Pounds.
Baltimore and Ohio Railroad	220, 327, 200
Northern Central Railroad	380, 612, 647
Philadelphia, Wilmington and Baltimore Railroad	223, 748, 900
Baltimore and Potomac Railroad	245, 270, 781
Western Maryland Railroad	34, 921, 786
Steam and sail to Southern and Gulf States	950, 000, 000
Total	2, 059, 881, 354

ADVANTAGES OF BALTIMORE AS A MANUFACTURING CENTER.

Recapitulatory.

Of natural or legislative advantages offered to those who seek the investment of capital in manufacturing enterprises the city of Baltimore may claim to be in possession to an unusual extent—certainly second to no other city in the country. The boundaries include large tracts of unoccupied space, to be had by rental, or purchase on favorable terms, which are favorably located, whether by stream, or river, on the line of the basin, or by the shore leading to the broad bay.

Besides these, within the corporate limits, the suburbs present great advantages in streams, capable of affording ample power, that only wait to be utilized.

In some cases free ground for a term of years is offered to those who may establish manufactories.

The neighboring soil is rich in ores and materials in constant requisition in certain branches of manufactures.

Iron, limestone, slate, chromic iron ore, steatite, mica, emery, kaolin, fire-brick clay, pottery clay, sand of superior quality for glass manufacture, all are found in the neighborhood, some of them of unrivaled excellence.

Our proximity to the exhaustless coal-fields of Maryland, Pennsylvania, and West Virginia, with the convenience of the Chesapeake and Ohio Canal, the Baltimore and Ohio, Northern Central, and Western Maryland Railroads, two of these lines bringing the article to the water's edge, substantiate this as the cheapest seaport for fuel in the United States.

Wood arrives in abundant supply, by sailing vessels, from the country bordering on the Chesapeake and its tributaries and from the Carolinas.

The city government has wisely exempted from taxation all manufacturing "plant" within its jurisdiction, and as the expenditures necessary in this direction often absorb two-thirds of the capital invested, this legislation, so near to the exemption of capital itself, presents advantages too obvious to be overlooked.

With equal liberality, water for these purposes is charged at an almost nominal rate by the authorities. Neither of these may be looked upon as spasmodic acts of

legislation, nor is there the remotest probability that the privilege will be withdrawn, as the supply of 170,000,000 gallons per day leaves about 100,000,000 gallons to be used in manufacturing.

Taxes, which affect all enterprises, are here lower, with one or two exceptions, than in any other city of like pretensions, the rate for some time having been $1.37 per $100.

The provision markets are at all times well supplied, and with the regular succession of the season's productions. Few cities have such abundance, at such reasonable prices. The climate is as near to perfection as need be; we are spared the rigors of winter, in their extreme severity, and are exempted from endemics and epidemics.

These conditions certainly favorably affect labor, which is plentiful and at low wages. There are few cities where the laborer can live so comfortably and economically beneath his own roof—tenement houses being things unknown. It is literally true that every laborer may have here his own domicil, and protected to that extent, contamination must proceed from without, not from within.

Equally great are the opportunities for the interchange of the raw material for the manufactured article. Nearer the petroleum region than Philadelphia; at a point where the Susquehanna hemlock, Carolina yellow pine and cypress, the West Virginia hickory and poplar, and the West India and Central America hard woods and veneering materials meet; nearer than any other seaport to the coal regions and to the grain and pork producing sections of the west, and to the northern lakes, by direct rail lines, than is New York, Baltimore, the most northern of southern and the most southern of northern cities, is situated from its inland and central location the most natural outlet for products of the entire country. Located as it is at the head of the Mediterranean of America, as the Chesapeake Bay has not inaptly been termed, this city further presents a harbor approached by a broad and deep channel, subject to no unusual ebb or flow of tide, at which are hourly arriving steamers that reach all the South Atlantic ports, supplemented by numberless steamboats and sailing craft, of every shape and build, that drain the shores of the tributary rivers and inlets—the fore-shore of fertile land to the extent of two thousand or more miles. These conditions, in addition to the lines of rail that reach the North, the East, the South, and the West, are such as assure for the manufacturing growth of the city the greatest possibilities.

LAWS OF MARYLAND, 1882, CHAPTER 187.

AN ACT to encourage the development of manufactures and manufacturing industry in the city of Baltimore by adding, for that purpose, an additional section to article four of the Code of Public Local Laws, title "Baltimore City," subtitle "Taxes and Loans."

SECTION 1. *Be it enacted by the General Assembly of Maryland*, That the following section be, and the same is hereby, added to article four of the Code of Public Laws, title "Baltimore City," subtitle "Taxes and Loans."

2. The mayor and city council of Baltimore are authorized and empowered, whenever it shall seem expedient for the encouragement of the growth and development of manufactures and manufacturing industries in said city, to provide by general ordinance for the abatement of any or all taxes levied by authority of said mayor and city council, or any ordinance thereof, for any of the corporate uses thereof, upon any mechanical tools or implements, whether worked by hand or by steam, or other motive power, machinery, manufacturing apparatus, or engines owned by any individual, firm, or corporation in said city, and properly subject to valuation and taxation therein; which said tools, implements, machinery apparatus, or engines shall be actually employed and used in the business of manufacturing in said city, and it shall be the duty of the judges of the appeal tax court of said city to make such abatements of taxes levied as aforesaid as may be authorized and directed by said mayor and city council, by ordinance as aforesaid, provided such abatement shall be extended to all persons, firms, or corporations engaged in the branch or branches of manufacturing industry proposed to be benefited by ordinance under the provisions of this act; provided, further, that application for such abatement as aforesaid shall be made and verified to the satisfaction of said judges, by the oath of the party applying for the same, or other satisfactory evidence before the annual revision and correction of the tax lists in each year, which said judges of the appeal tax court are by law required to make, shall be completed and returned by said judges to the tax department of said city, and not afterwards; and said judges shall further keep a record of all abatements made by them as aforesaid, and report in writing the aggregate amount thereof during the year to said mayor and city council, on or before the fifteenth day of March in each year.

SEC. 2. *And be it further enacted*, That this act shall take effect from the date of its passage.

Approved, April 10, 1880.

RHODES HOUSE ★OXFORD★ LIBRARY

APPENDIX.

EXTRACTS FROM REPORT ON INDIAN WHEAT, BY M'DOUGALL BROS.

To the Secretary of State for India:

We have the honor to report upon the Indian wheat comprised in the four lots delivered to us, &c.

The quantity of each wheat operated upon by each system of milling (grinding under millstones and crushing between rollers) was 5,000 pounds as delivered from the ships (weight of sacks or bags not included).

The results obtained are stated in the subjoined synopsis for convenience of ready comparison.

The four lots of Indian wheat were delivered to us packed in the ordinary gunny bags and all in good condition. We found them to be good representative samples of No. 1 Indian fine, soft white; No. 2 Indian superior, soft red; No. 3 Indian, average hard white; No. 4, Indian, average hard red; but were, with the exception of No. 3, much cleaner and purer from impurities than these wheats generally are.

The leading characteristics of these wheats are as follows:

No. 1, fine, soft white (lot 1).—Grains white, medium sized and regular; fairly mellow, skin thin, handled exceedingly well, weight per bushel 64 pounds, which is only equalled by specially fine samples of wheat; clean and free from seeds; contained 2 per cent. of weeviled grains.

Results of milling and baking prove it is an exceedingly good and useful wheat, the flour being great in quantity, of pure white color and superior bloom, and with a slight beany flavor. * * * The yield of bread from it is very large.

Superior soft red (lot 2).—Grains dull light brown, with about 5 per cent. white wheat; size half medium and half small; some hard; skin thin; handled very well; weight per bushel, 62¼, which is only reached by fine wheats; clean and free from seeds; only a trace of weevil.

Results of milling and baking prove it is a good and useful wheat, the flour being great in quantity and of medium color and strength, with a slight beany flavor, and containing an average of gluten. * * * The yield of bread is exceptionally large.

Average hard white (lot 3).—Grains light yellow and semi-transparent, with a little red; skin thin; in shape, long and arched.

The wheat itself clean, but intermixed about 3 per cent. with hard dry bits of mud; weight 60 pounds per bushel; weevils, only a trace.

Results of milling and baking prove it a useful wheat for markets requiring strength. * * *

This wheat (and No. 4) are probably unsurpassed by any other wheats in the world as regards the quantity of flour yielded. * * *

Specially useful for mixing with very damp English wheat to bring them into condition for milling.

It is also a profitable wheat for millers, owing to its requiring 8¼ per cent. of water to render it sufficiently mellow for use.

To this wheat and to the Indian average hard red (lot 4) must be awarded the distinction of producing more bread than any other flour, making it a baker's flour, as well as a miller's.

Average hard red (lot 4).—Grains very large and coarse, long, arched, and pointed; in color, dull brown, and semi-transparent, with an admixture of 10 per cent. soft white; skin, thin; handles well, contains a little grain seed, linseed, and barley; weight 61¼ pounds per bushel; weevils, only a trace.

Results of the milling and baking prove it produces a common and dry strong flour, in almost unequaled quantity. In color, inferior; a profitable wheat for millers, as it takes 7.6 per cent. water to render it sufficiently mellow for use. * * * * * * We pronounce them to be exceedingly useful wheats; in fact, hardly equaled for what is deficient and wanting in the English markets by any other wheats.

The chief characteristics are just those in which the wheats grown in our variable climate are most deficient.

Such unprecedented yields of flour as shown by these wheats, ranging (by ordinary grinding) from 77.46 to 80.52 per cent., against English 65.2 and American spring 72.2, speaks volumes in their favor.

McDOUGALL BROS.

10 MARK LANE,
London, December 15, 1882.

APPENDIX No. 72.

STATEMENT PREPARED BY MR. WILLIAM THURSTONE IN REGARD TO THE CANALS OF THE STATE OF NEW YORK, SAINT LAWRENCE RIVER NAVIGATION, THE RAILROAD TRANSPORTATION INTERESTS OF CANADA, THE COMMERCIAL, INDUSTRIAL, AND TRANSPORTATION INTERESTS OF BUFFALO, AND HISTORICAL FACTS OF INTEREST IN REGARD TO TRANSPORTATION.

THE CANALS OF THE STATE OF NEW YORK.

In the following statement will be found a brief historical sketch of the Erie Canal and its laterals, a subject worthy of being placed more fully on record as a memorial of the projectors of the great work. Allusion is made to its trade, tolls, and tonnage; its receipts, expenses, and revenues; its inception, and the improvements which have been made from time to time; the circumstances attending the abolition of the tolls; the policy pursued relative to the lateral canals; the freight charges that have ruled; movement of tonnage east and west; its debt and how the present and future annual expenses are to be met; the methods of propulsion of boats; suggested improvements in the canal and of the boats navigating them; with other topics of interest.

The Erie Canal is the largest and most important canal in the United States, and, outside of China, in the world. It forms the connecting link of water navigation between the Hudson River and tide-water, at Albany and Troy, and the chain of inland lakes which extend to the center of the continent, connecting with Lake Erie at Buffalo and with Lake Ontario at Oswego. It is well known to the memory of many now living that the city of New York did not by any means enjoy her present supremacy as compared with other commercial cities of this country until the opening of the Erie Canal and its lateral branches.

A survey of the proposed line of the Erie Canal was taken in 1811, and application was made to Congress for $8,000,000 to defray the cost of its construction, but the appropriation was refused in consequence of the threatened war with Great Britain. The State of New York finally authorized the work to be done at its own expense (after applying to other States for assistance) on April 15, 1817. It was commenced July 4, 1817, and completed October 26, 1825. As thus originally constructed it had a width of 40 feet at the surface, 28 feet at the bottom, a depth of 4 feet, and a capacity for boats of 78.62 feet. The cost of the construction was $7,145,000.

Commerce developed so rapidly on the line of the canal after its opening, far in excess of the anticipations of its projectors, that cheaper transportation to be brought about by enlarged capacity was demanded, and accordingly on May 11, 1835, an enlargement was authorized, which was commenced in August, 1836, and completed in September, 1862. Its dimensions are now as follows: A prism of 70 to 72 feet at the top water line, 52½ to 56 feet at the bottom, and 7 feet depth. It has seventy-two locks, the length of which between the quoins is 110 feet, admitting boats 96½ feet in length; 106 feet in the clear, admitting boats 17½ feet wide. Average burden of boats, 210 tons; maximum, 240 tons. The immediate results of the enlargement were to increase the capacity of the canal from an annual tonnage movement of 5,000,000 to 16,000,000, and to reduce the cost of transportation one-half. In 1876 a system of double locks was completed and brought into use along its entire line. The length of the Erie Canal, from Troy to Buffalo, is 345 miles, and from Albany to Buffalo 352 miles, with 656 feet of lockages. It is supplied with water from Buffalo to Seneca River (about 155 miles) from Lake Erie; thence to Little Falls by streams, lakes, and reservoirs, and from the Mohawk River at that point to tide-water.

The following statement shows the years in which the lateral canals of the State were opened for navigation: The Cayuga and Seneca in 1826, the Oswego in 1828, the Chemung in 1834, the Crooked Lake in 1835, the Chenango in 1837, the Genesee Valley in 1841, the Oneida Lake in 1841, the Black River in 1850, and the Baldwinsville in 1853.

The Champlain Canal was opened for navigation November 24, 1819, from the Hudson at Fort Edward to Lake Champlain. It was completed from Lake Champlain to Albany September 10, 1823, and on October 8 of the same year the first boat passed

from the west and north through the junction canal into the tide-water of Albany. The legislature of 1870 directed the canal to be enlarged in such a manner as to provide throughout its entire length a uniform depth of 7 feet of water; width at bottom 44 feet, at surface 58 feet. By the same act the sum of $425,000 was appropriated from the proceeds of a tax for prosecuting the work. In 1874 another appropriation of $500,000 was made to continue the work.

The prosecution of the enlargement of the Champlain Canal was practically arrested by the adoption of the constitutional amendment in the fall of 1874, which limited expenditures for ordinary and extraordinary repairs to the amount of the previous year's income. Since 1875 but little work has been done, and the expenditures which have been made from time to time, as the condition of the revenue permitted, were to construct bridge abutments and superstructures, and to widen and strengthen the banks at particular points to enable loaded boats to pass at such places.

Since the passage of the original act, the enlargement of the Champlain Canal has been restricted by the legislature to the bottoming out the prism and the Glens Falls feeder, and raising and strengthening the banks thereof so as to produce a uniform depth of 6 feet of water therein thoughout its entire length. At the time the work was arrested the canal was literally torn to pieces. "Now that there is no constitutional inhibition, there is nothing to prevent a vigorous prosecution of the work to the extent of the unexpended balance of the appropriation," says the late canal auditor in his last report, 1882, and further that "the amount now in the treasury to the credit of the enlargement fund is $195,421.03, and is immediately available under chapter 97 of the laws of 1882."

As the competition of other routes and modes of transportation showed themselves, the policy of the State was to improve the canals and lessen the tolls. The State also decided to abandon the lateral canals; the only exceptions being the Oswego, the Champlain and the Cayuga, and Seneca canals. (The Black River Canal was afterwards retained.) The laterals were ruined by railroad competition, thereby becoming a heavy loss to the revenues of the canals, as they did not pay the expenses of superintendence, much less the cost of maintenance for many years.

Article 7, section 6, of the constitution as amended in 1874, gave permission for the sale or abandonment of all the canals owned by the State excepting the Erie, the Champlain, the Cayuga and Seneca, and the Oswego. In accordance with this permission the Crooked Lake Canal was disposed of in 1877; and the Chemung Canal, the Genesee Valley Canal and the main portion of the Chenaugo Canal were declared in 1878 abandoned for the purposes of navigation. The Black River Canal has been retained by a subsequent act, more for its value as a feeder to the main line than for any other reason. The Oneida Lake River Improvement, the Cayuga Inlet, and the Seneca River towing-path are not in use, being allowed to fall into decay. The Baldwinsville Canal is about 5 miles long and starts from Mud Lock, on the Oswego Canal, up the Seneca River to Baldwinsville (running most of the distance in the Seneca River), and is not retained by the State; but it is occasionally navigated, however. This completes the record to date.

In view of the fact that no more revenue is to be derived from the canals, the following official document, showing their total earnings, operating expenses, and cost of construction is of interest and is herewith submitted:

Statement showing the total revenues from tolls, interest on toll deposits, and miscellaneous sources; the total expenditures for superintendence, collection, and ordinary repairs; the profit or loss in operating each canal, and the total cost for construction and improvements (exclusive of interest paid on canal loans), beginning with the year in which the first expenditure was made on construction account and brought down to the close of the fiscal year which ended September 30, 1883.

Canals.	Revenues.	Cost of collection, superintendence, and ordinary repairs.	Loss in operating.	Profit in operating.	Cost of construction and improvements.
Baldwinsville	$1,261 48	$18,038 58	$16,777 10		*$31,000 52
Black River	305,662 59	1,601,413 34	1,295,750 75		3,895,177 67
Cayuga Inlet	8,873 00	1,011 62		7,861 38	2,020 00
Cayuga and Seneca	1,055,015 23	1,038,934 54		16,080 69	1,834,184 40
Champlain	6,431,676 16	5,702,552 71		729,123 45	4,914,937 97
Chemung	525,565 29	2,022,258 99	1,496,693 70		1,463,585 57
Chenango	744,027 11	2,084,455 92	1,340,428 81		4,790,178 06
Crooked Lake	45,490 41	424,658 44	379,168 03		495,091 54
Erie	121,716,944 09	29,769,053 74		91,947,890 35	49,609,954 4
Genesee Valley	860,164 78	2,814,808 67	1,954,643 89		6,737,793 81
Oneida Lake	65,8 3 76	144,060 60	78,166 84		511,649 36
Oneida River Improvement	217,202 89	41,170 47		176,032 42	224,072 33
Oswego	3,715,566 65	3,401,296 08		313,270 57	4,295,372 56
Seneca River towing-path	7,782 07	19 54		7,762 53	1,602 65
Totals	135,701,125 51	49,063,733 24	6,561,629 12	93,199,021 39	78,706,615 48

* Does not include payments from the general fund.

In the foregoing statement the canals are credited, under the head of "revenues," with all the interest earned on toll deposits. The cost of construction and improvements includes all payments for extraordinary repairs and for land damages, but does not include the amount paid from the treasury for the interest on the debts contracted in the construction of the canals.

The following statement is from the comptroller's report for 1883:

"The aggregate of the canal debt on September 30, 1882, was $8,983,360, with an aggregate unapplied balance in the sinking fund of $2,723,698.57, leaving the real balance unprovided for, $6,259,661.43. On the 30th September, 1883, the account stood as follows: Aggregate debt, $8,348,160; balance of sinking fund, including investments, $2,495,553.06; balance unprovided for, $5,852,606.94; showing a reduction in the debt during the year of $635,200."

The statement shows that after deducting from the revenues the cost of collection, superintendence, and ordinary repairs (which are the operating expenses) there remains the sum of $86,637,392 27 as the net profit to the credit of the canals as a system, which is $7,930,776.79 in excess of their cost, exclusive of interest. The amount which the canals have actually cost the State in excess of their earnings is represented by the amount of taxes paid into the treasury for canal purposes, which, at the close of the fiscal year 1883, aggregated $39,844,966.21.

A few statistics will suggest the direct and indirect benefits which have been derived from the foregoing investment: From 1836, when an account of tonnage was commenced, to the close of 1882, the freight transported through the canals amounted to 188,900,000 tons; and if we estimate for the years prior to 1836, it is safe to assert that fully 200,000,000 tons have been transported. The population of New York City has increased from 123,706 in 1820, to 1,206,577 in 1880; and of the State from 1,372,812 in 1820 to 5,082,871 in 1880, the last census year. The aggregate equalized value of the real and personal property of the State has increased from $256,021,494 in 1820, to $2,783,682,567 in 1882.

The following official statements from the last reports of the auditor are of great value and tell their own story so clearly that they are presented without comment:*

* The figures for 1883 are from official sources.

No. 1.—*Statement showing the amount of tolls (including rents from surplus waters) collected in each fiscal year, from 1826 to 1883; total sum paid to collectors, inspectors, and weighmasters, and the expenses of their offices; the percentage of the cost of collection on the gross amount of tolls collected; the year in which the collection of tolls commenced on each lateral canal.*

Years.	Tolls.	Cost of collection.	Per cent.	Names of canals.
1826	$844,508 02			Cayuga and Seneca.
1827	881,134 09	$27,086 61	3.06	
1828	831,002 10	31,095 20	3.73	Oswego.
1829	817,919 28	32,171 04	3.91	
1830	1,045,163 42	29,368 91	2.77	
1831	751,268 62	27,686 13	3.72	
1832	1,112,917 74	30,191 44	2.60	
1833	1,388,380 53	32,477 33	2.30	
1834	1,387,715 02	33,327 39	2.37	
1835	1,484,595 61	35,391 37	2.35	Chemung and Crooked Lake.
1836	1,598,455 48	35,275 32	2.19	
1837	1,325,609 77	41,476 69	3.09	Chenango.
1838	1,465,275 16	36,466 94	2.45	
1839	1,655,788 56	53,329 85	3.20	
1840	1,606,827 28	53,691 33	3.36	
1841	1,989,686 71	53,247 08	2.66	
1842	1,797,463 80	52,362 67	2.89	Genesee Valley and Oneida Lake.
1843	1,953,829 08	47,065 05	2.40	
1844	2,388,457 34	46,260 05	1.92	
1845	2,375,533 43	47,423 69	1.98	
1846	2,798,849 76	49,312 14	1.75	
1847	3,463,710 26	50,759 55	1.47	
1848	3,156,968 38	57,768 31	1.83	
1849	3,378,920 18	56,706 62	1.68	
1850	3,393,081 37	54,986 50	1.62	Black River.
1851	3,703,999 34	75,358 45	2.03	
1852	3,174,857 49	69,544 31	2.19	
1853	3,162,190 14	70,460 42	2.22	Baldwinsville.
1854	2,982,114 97	75,542 93	2.53	
1855	2,632,906 11	79,846 49	3.03	
1856	2,721,740 63	82,623 88	3.04	
1857	2,531,804 38	83,046 94	3.28	
1858	2,047,391 01	83,376 06	4.31	
1859	1,814,362 47	69,582 93	3.84	
1860	2,381,301 28	96,889 04	4.07	
1861	3,358,033 97	70,456 85	2.10	
1862	4,797,283 09	66,454 20	1.39	
1863	5,029,596 32	65,938 58	1.31	
1864	4,310,293 02	68,577 17	1.59	
1865	3,521,631 63	77,122 55	2.19	
1866	4,253,224 92	85,890 65	2.02	
1867	3,903,326 20	87,993 00	2.20	
1868	4,418,309 50	90,108 81	2.04	
1869	4,114,093 52	90,039 03	2.19	
1870	3,083,023 05	104,496 39	3.39	
1871	2,814,953 79	103,098 61	3.66	
1872	3,063,033 89	97,406 32	3.18	
1873	3,027,568 67	95,775 05	3.16	
1874	2,923,400 82	97,679 83	3.34	
1875	1,904,855 64	87,975 50	4.62	
1876	1,478,276 55	84,254 37	5.70	
1877	1,049,228 15	65,393 12	6.23	
1878	984,984 62	54,813 76	5.56	
1879	909,640 33	47,169 53	5.18	
1880	1,185,529 82	51,909 89	4.38	
1881	812,067 05	44,897 26	5.53	
1882	649,513 73	38,227 06	5.89	
1883*	274,255 14	27,371 24		

* From commencement of fiscal year to the close of navigation, 1883.

ment showing the tolls (including rents from surplus waters) received in each from 1826 to 1883; the cost of repairs and collection of tolls; the percentage ost of maintenance of all the canals bears to the gross amount of tolls: the onnage of the total movement on allthe canals from 1836, when an account of s commenced, to 1883.

Years	Tolls collected.	Expenses of collection and repairs.	Per cent. of cost of maintenance on tolls.	Tonnage of all canals.
.....	$844,508 02	$531,675 73	62.95	.....
.....	881,134 99	494,701 05	56.18	.....
.....	831,002 10	393,517 99	47.41	.....
.....	817,919 28	357,587 52	43.76	.....
.....	1,045,163 42	292,673 76	28.03	.....
.....	751,268 62	224,419 83	29.82	.....
.....	1,112,917 74	428,964 78	38.54	.....
.....	1,388,380 53	487,797 32	35.15	.....
.....	1,387,715 02	534,897 82	38.54	.....
.....	1,484,595 61	510,524 76	34.41	.....
.....	1,598,455 48	467,599 33	29.22	1,310,807
.....	1,325,609 77	608,993 60	45.88	1,171,296
.....	1,465,275 16	622,027 29	42.42	1,333,011
.....	1,655,788 56	504,757 53	30.45	1,425,713
.....	1,606,827 28	575,020 58	35.80	1,416,046
.....	1,989,686 71	514,517 55	25.84	1,521,661
.....	1,797,463 80	642,584 30	35.72	1,236,931
.....	1,953,829 08	531,145 56	27.18	1,513,439
.....	2,388,457 34	636,857 72	26.63	1,816,586
.....	2,375,533 43	738,106 32	31.07	1,977,565
.....	2,798,849 76	639,353 01	22.83	2,268,662
.....	3,463,710 26	641,650 08	18.53	2,864,810
.....	3,156,968 88	855,850 64	27.11	2,796,230
.....	3,378,920 18	685,803 91	20.30	2,894,732
.....	3,393,081 37	835,965 81	24.64	3,076,617
.....	3,703,999 34	907,730 20	24.50	3,582,732
.....	3,174,857 49	1,049,045 92	33.04	3,863,441
.....	3,162,190 14	1,098,476 92	34.73	4,247,853
.....	2,982,114 97	1,237,866 20	41.51	4,165,862
.....	2,632,906 11	989,792 12	37.59	4,022,617
.....	2,721,740 63	786,633 40	28.90	4,116,082
.....	2,531,804 38	970,453 46	38.33	3,344,061
.....	2,047,291 01	1,078,878 91	52.69	3,065,192
.....	1,814,362 47	897,878 96	49.49	3,781,684
.....	2,381,301 28	746,976 78	31.33	4,650,214
.....	3,358,033 97	706,786 14	21.05	4,507,635
.....	4,797,283 09	773,398 32	16.12	5,598,785
.....	5,029,596 32	770,882 52	15.33	5,557,692
.....	4,310,293 02	1,028,909 46	23.87	4,852,941
.....	3,521,631 63	1,927,373 59	54.73	4,729,654
.....	4,253,224 92	1,434,989 73	33.74	5,775,220
.....	3,993,326 29	1,220,192 65	30.56	5,688,325
.....	4,418,309 50	1,184,245 04	26.80	6,442,225
.....	4,114,093 52	1,278,507 52	31.08	5,859,080
.....	3,083,023 05	1,945,635 92	63.11	6,173,769
.....	2,814,953 79	2,250,145 62	79.94	6,467,888
.....	3,063,034 89	2,078,020 62	67.84	6,673,370
.....	3,027,568 67	1,459,165 24	48.19	6,364,762
.....	2,923,400 82	1,469,466 83	50.26	5,804,588
.....	1,904,855 04	1,414,456 94	74.25	4,859,858
.....	1,478,276 55	1,202,053 62	81.32	4,172,129
.....	1,049,228 15	1,050,329 08	100.10	4,955,963
.....	984,984 62	739,748 97	75.10	5,171,320
.....	909,640 33	751,774 82	82.64	5,362,372
.....	1,185,529 82	889,015 84	74.99	6,457,656
.....	812,067 05	1,023,907 06	126.09	5,179,192
.....	649,513 73	653,510 01	100.62	5,467,423
.....	274,255 14	664,446 25	.....	5,664,056

* From commencement of fiscal year to close of navigation, 1883.

No. 3.—*Statement showing the receipts from tolls and other sources, the miscellaneous expenses of collection and repairs, and surplus revenues, from 1836 to 1883, in each fiscal year.*

Years.	Tolls and miscellaneous receipts.	Expenses of collection and repairs.	Surplus revenues in each year.
1836	$1,598,455 48	$467,599 33	$1,130,856 15
1837	1,325,609 77	608,993 60	716,616 17
1838	1,465,275 16	622,027 29	843,247 87
1839	1,655,788 56	504,757 53	1,151,031 03
1840	1,606,827 28	575,020 58	1,031,806 70
1841	1,989,686 71	514,517 55	1,475,169 16
1842	1,797,463 80	642,584 30	1,154,879 50
1843	1,953,829 08	531,145 56	1,422,683 52
1844	2,368,457 34	636,857 72	1,731,599 62
1845	2,375,533 43	738,106 32	1,637,427 11
1846	2,842,214 13	639,353 01	2,202,861 12
1847	3,473,484 60	641,650 08	2,831,834 52
1848	3,204,070 16	855,850 64	2,348,219 52
1849	3,442,906 62	685,803 91	2,757,102 71
1850	3,486,172 30	835,965 81	2,650,206 49
1851	3,722,163 11	907,730 20	2,814,432 91
1852	3,179,145 78	1,049,045 92	2,130,099 86
1853	3,168,546 51	1,098,476 92	2,070,069 59
1854	2,988,665 21	1,237,865 20	1,750,799 01
1855	2,639,792 12	989,792 12	1,650,000 00
1856	2,749,133 40	786,633 40	1,962,500 00
1857	2,559,469 06	970,453 46	1,589,015 60
1858	2,072,204 88	1,078,878 91	993,325 97
1859	1,859,879 63	897,878 96	962,000 67
1860	2,416,588 39	746,976 78	1,669,611 61
1861	3,402,628 30	706,786 14	2,695,842 16
1862	4,854,989 67	773,398 32	4,081,591 35
1863	5,118,501 35	770,882 52	4,347,618 83
1864	4,346,265 52	1,028,909 46	3,317,356 06
1865	3,577,465 45	1,927,373 59	1,650,091 86
1866	4,309,746 12	1,434,989 73	2,874,756 39
1867	4,050,357 79	1,220,192 65	2,830,165 14
1868	4,477,546 17	1,184,245 04	3,293,301 13
1869	4,161,280 10	1,278,507 52	2,882,772 58
1870	3,107,138 90	1,945,635 92	1,161,502 98
1871	2,842,549 94	2,250,145 62	592,404 32
1872	3,078,247 96	2,078,020 62	1,000,227 34
1873	3,082,452 04	1,459,165 24	1,623,286 80
1874	2,947,972 91	1,469,466 83	1,478,506 08
1875	1,925,995 63	1,467,315 95	458,679 68
1876	1,487,332 89	1,149,194 61	338,138 28
1877	1,053,361 01	1,050,329 68	3,031 33
1878	988,651 35	739,748 97	248,902 38
1879	921,252 81	751,774 82	169,477 99
1880	1,200,134 63	889,015 84	311,118 79
1881	818,264 61	1,023,907 06	*205,642 45
1882	659,970 35	653,510 01	6,460 34
1883	282,800 41	664,446 25	.....
Total tolls	124,656,268 42	47,180,928 49	77,856,985 77
Total expenses	46,516,482 24	.....	.....
Total surplus revenues	77,475,339 93	.....	.....

*Deficiency.

—Statement showing the total tons of transportation, the total cost of transportation, ding toll and freight, and the difference each year between toll and freight, for forty- years.

ear.	Tons.	Toll to the State.	Freight to carrier.	Total tolls and freight.	Freight more than toll.	Freight less than toll.
.....	1,171,296	$1,292,623	$1,890,773	$3,183,396	$598,150	.....
.....	1,333,011	1,590,91	1,985,484	3,576,395	394,573	.....
.....	1,435,713	1,616,382	2,109,989	3,726,371	493,607	.....
.....	1,416,046	1,775,747	2,419,802	4,195,549	644,055	.....
.....	1,521,661	2,034,882	1,992,532	4,027,414	.....	$42,350
.....	1,236,931	1,749,196	1,555,578	3,304,774	.....	193,618
.....	1,513,439	2,081,590	1,478,147	3,559,737	.....	603,443
.....	1,816,586	2,446,374	1,896,863	4,343,237	.....	549,511
.....	1,985,011	2,646,181	1,785,280	4,431,461	.....	890,901
.....	2,268,662	2,756,106	2,716,603	5,472,709	.....	39,503
.....	2,869,810	3,635,381	4,818,152	8,453,533	1,182,771	.....
.....	2,796,230	3,252,293	2,641,007	5,893,400	.....	611,386
.....	2,894,732	3,268,226	2,495,963	5,764,189	.....	772,263
.....	3,076,616	3,273,899	2,489,489	5,763,388	.....	784,410
.....	3,582,733	3,329,727	3,072,122	6,401,849	.....	257,605
.....	3,863,441	3,118,244	3,681,908	6,800,152	563,664	.....
.....	4,247,853	3,204,718	4,189,166	7,393,884	984,448	.....
.....	4,165,862	2,773,566	3,009,289	5,782,855	235,723	.....
.....	4,022,617	2,805,077	3,036,343	5,841,420	231,266	.....
.....	4,116,082	2,748,212	3,825,013	6,573,225	1,076,801	.....
.....	3,344,061	2,045,641	1,830,359	3,876,000	.....	215,282
.....	3,655,192	2,110,754	2,391,683	4,502,437	280,929	.....
.....	3,781,684	1,723,945	1,941,861	3,665,806	217,916	.....
.....	4,650,214	3,099,597	5,039,853	8,049,450	2,030,256	.....
.....	4,507,635	3,908,785	5,460,593	9,369,378	1,551,808	.....
.....	5,598,785	5,188,943	5,591,488	10,780,431	402,5[illegible]	.....
.....	5,557,692	4,645,207	4,419,798	9,065,005	.....	255,409
.....	4,852,941	3,983,982	6,055,627	10,939,609	2,071,645	.....
.....	4,729,654	3,839,955	4,766,066	8,605,961	926,051	.....
.....	5,775,220	4,436,639	5,723,12	10,160,051	1,286,773	.....
.....	5,668,325	4,088,058	4,575,061	8,663,119	487,003	.....
.....	6,442,225	4,246,563	4,766,096	9,012,659	519,533	.....
.....	5,858,080	3,778,501	4,713,630	8,492,131	935,129	.....
.....	6,173,769	2,611,578	4,941,10	7,552,988	2,329,832	.....
.....	6,467,888	3,100,838	7,679,049	10,779,887	4,578,211	.....
.....	6,673,370	3,072,411	7,576,300	10,648,71	4,503,889	.....
.....	6,364,782	2,976,718	6,408,357	9,385,075	3,431,639	.....
.....	5,804,588	2,637,071	4,335,536	6,972,607	1,698,465	.....
.....	4,859,858	1,590,032	3,273,105	4,863,137	1,683,073	.....
.....	4,172,129	1,340,004	2,558,915	3,898,919	1,218,911	.....
.....	4,955,963	880,896	3,958,137	4,839,033	3,077,241	.....
.....	5,171,320	393,348	2,943,172	3,936,520	1,049,824	.....
.....	5,362,372	941,584	3,529,037	4,470,611	2,587,463	.....
.....	6,457,656	1,155,419	4,833,526	5,988,945	3,678,107	.....
.....	5,179,192	632,390	3,257,843	3,890,233	2,625,453	.....
.....	5,407,423	655,826	3,373,154	4,028,980	2,717,328	.....
.....	5,664,056	*	*	*	*	*
otal	194,553,961	120,987,763	170,038,674	291,026,437	52,686,082	5,155,681

*Not reported.

following tables, Nos. 5 and 6, are prepared to show the tendency of trade on nals:

No. 5.—*Statement showing the total tonnage of all the property carried on the canals, ascending and descending, its value, and the amount of tolls collected for forty-seven years.*

Year.	Tons.	Value.	Tolls.
1837	1,171,296	$55,809,288	$1,292,622
1838	1,333,011	65,746,559	1,590,911
1839	1,435,713	73,399,764	1,616,382
1840	1,416,046	66,303,892	1,775,747
1841	1,521,661	92,202,929	2,034,882
1842	1,236,931	60,016,608	1,749,196
1843	1,513,439	76,276,909	2,081,590
1844	1,816,586	90,921,152	2,446,374
1845	1,977,565	100,629,859	2,646,181
1846	2,268,662	115,612,109	2,756,106
1847	2,869,810	151,563,428	3,635,381
1848	2,796,230	140,086,157	3,252,212
1849	2,894,732	144,732,285	3,268,226
1850	3,076,617	156,397,929	3,273,891
1851	2,582,733	159,981,801	3,329,727
1852	3,863,441	196,603,517	3,118,234
1853	4,247,853	207,179,570	3,294,718
1854	4,165,862	210,284,312	2,773,566
1855	4,022,617	204,390,147	2,805,977
1856	4,116,082	218,327,062	2,748,212
1857	3,344,061	136,997,018	2,045,661
1858	3,665,192	138,568,844	2,110,754
1859	3,781,684	132,160,758	1,723,945
1860	4,650,214	170,849,198	3,009,597
1861	4,507,635	130,115,893	3,908,785
1862	5,598,785	203,234,331	5,186,943
1863	5,557,692	240,046,461	4,645,297
1864	4,852,941	274,400,639	3,983,982
1865	4,729,654	256,237,104	3,839,955
1866	5,775,220	270,963,676	4,436,639
1867	5,688,325	278,956,712	4,088,058
1868	6,442,225	305,301,929	4,246,563
1869	5,859,080	249,281,284	3,778,501
1870	6,173,769	231,836,176	2,611,578
1871	6,467,888	238,767,691	3,100,838
1872	6,673,370	220,913,321	3,072,411
1873	6 364,782	191,715,500	2,976,718
1874	5,804,588	196,674,322	2,637,071
1875	4,859,958	145,008,575	1,500,032
1876	4,172,129	113,090,379	1,340,004
1877	4,955,963	128,923,890	880,198
1878	5,171,320	182,254,528	993,348
1879	5,362,372	285,280,726	941,574
1880	6,457,656	247,844,790	1,155,419
1881	5,179,192	162,153,565	632,399
1882	5,467,423	147,918,907	655,826
1883	5,664,056	147,861,223	None.

No. 6.—*Statement showing the total tons coming to tide-water from Erie and Champlain Canals for each of the forty-seven years, and the aggregate value thereof in market.*

Year.	Tons.	Value.	Year.	Tons.	Value.
1837	611,781	$21,822,354	1861	2,980,144	$81,432,759
1838	640,481	23,038,510	1862	2,402,709	111,176,568
1839	602,128	20,163,199	1863	3,274,727	123,173,294
1840	669,012	23,213,573	1864	2,805,257	145,609,202
1841	774,334	27,225,322	1865	2,730,181	113,865,846
1842	666,626	22,751,013	1866	3,305,607	131,801,477
1843	836,861	28,453,408	1867	3,029,695	120,902,834
1844	1,019,094	34,183,167	1868	3,240,806	136,446,582
1845	1,204,943	45,452,321	1869	3,006,142	114,866,060
1846	1,362,319	51,105,256	1870	3,156,302	105,517,020
1847	1,744,283	73,092,414	1871	3,494,801	106,874,570
1848	1,447,905	50,883,907	1872	3,647,944	107,086,382
1849	1,579,946	52,375,521	1873	3,376,649	97,869,497
1850	2,038,863	55,474,637	1874	3,123,112	107,976,476
1851	1,977,151	53,927,508	1875	2,608,777	89,447,518
1852	2,234,822	66,893,102	1876	2,426,182	73,893,878
1853	2,505,797	73,688,044	1877	2,986,812	76,787,713
1854	2,223,743	72,120,681	1878	3,637,101	78,563,710
1855	1,890,593	74,177,937	1879	3,286,176	96,992,498
1856	2,123,469	74,286,735	1880	4,067,402	143,572,991
1857	1,617,187	51,190,018	1881	3,065,839	68,785,451
1858	1,985,142	61,536,06	1882	3,068,152	74,303,139
1859	2,121,672	43,175,312	1883	3,162,497	66,219,084
1860	2,854,877	78,798,617			

iexed statements, Nos. 7 and 8, show the movement to tide-water on the ca-ribing the various products, &c., under their appropriate headings:

atement showing the number of tons arriving at tide-water, the produce of the e, by way of Erie Canal, including the contributions of the lateral canals.

Years.	Products of the forest.	Agriculture.	Manufactures.	Merchandise.	Other articles.	Total.
.....	208, 779	117, 870	10, 152	.....	28, 105	364, 906
.....	174, 007	98, 172	8, 027	208	50, 839	331, 251
.....	189, 733	101, 053	7, 004	200	38, 243	336, 233
.....	157, 084	63, 713	6, 445	303	37, 509	265, 054
.....	119, 343	159, 823	5, 761	.....	24, 587	309, 514
.....	192, 122	72, 483	9, 603	100	14, 521	308, 829
.....	125, 622	102, 030	8, 123	100	23, 130	259, 005
.....	202, 810	124, 313	21, 720	100	30, 247	379, 190
.....	288, 787	135, 289	35, 204	203	39, 933	499, 416
.....	328, 955	224, 032	40, 619	157	61, 276	655, 039
.....	320, 838	202, 474	31, 635	174	45, 319	600, 440
.....	328, 652	192, 227	20, 247	666	76, 620	618, 412
.....	264, 549	184, 716	19, 090	160	65, 668	534, 183
.....	227, 847	200, 471	18, 410	.....	51, 348	498, 076
.....	314, 410	406, 101	15, 283	111	44, 912	780, 817
.....	270, 840	199, 775	15, 502	66	55, 501	541, 684
.....	290, 574	136, 549	14, 232	3, 821	47, 545	492, 721
.....	391, 224	168, 017	15, 260	4, 785	58, 462	637, 748
.....	357, 690	148, 327	16, 440	4, 213	79, 707	606, 377
.....	220, 865	1, 337	13, 020	8, 700	41, 030	285, 552
.....	173, 608	118, 164	18, 069	6, 656	58, 083	374, 580
.....	66, 824	.....	14, 468	7, 394	40, 134	128, 820
.....	147, 511	23, 421	17, 843	1, 789	33, 024	223, 588
.....	226, 450	84, 107	14, 920	3, 305	85, 917	414, 699
.....	166, 687	120, 226	15, 135	.....	84, 490	386, 538
.....	104, 094	109, 791	6, 412	1, 108	69, 783	291, 188
.....	143, 240	118, 906	5, 419	881	53, 805	322, 257
.....	145, 105	133, 431	8, 648	2, 256	78, 997	368, 437
.....	61, 167	52, 675	42, 812	1, 292	81, 552	239, 498
.....	23, 152	71, 369	25, 992	667	53, 025	174, 205
.....	101, 665	61, 833	40, 140	1, 355	82, 955	287, 948
.....	22, 855	.....	46, 196	1, 521	104, 156	174, 728
.....	20, 517	3, 685	60, 015	1, 440	77, 693	163, 350
.....	15, 493	24, 962	65, 270	1, 939	121, 457	229, 121
.....	18, 340	17, 168	68, 551	2, 832	134, 860	241, 751
.....	.....	.....	75, 942	2, 747	96, 356	175, 045
.....	4, 662	17, 045	60, 993	3, 456	128, 227	214, 383
.....	116, 156	.....	39, 237	2, 263	68, 244	225, 900
.....	35, 592	28, 551	27, 567	6, 238	171, 985	269, 933
.....	.....	3, 466	51, 223	1, 408	194, 729	250, 886
.....	76, 760	7, 312	17, 360	2, 117	239, 003	342, 552
.....	.....	.....	30, 737	3, 474	253, 716	287, 927
.....	.....	85, 143	34, 270	4, 802	257, 244	381, 459
.....	95, 827	124, 611	28, 864	12, 586	87, 937	349, 825
.....	111, 007	103, 897	33, 310	16, 271	160, 591	425, 076
.....	85, 417	165, 524	45, 601	8, 911	83, 729	389, 182
.....	70, 605	41, 997	50, 232	18, 730	96, 747	278, 311

tables not kept in 1883 for Statements 7 and 8. The aggregate of Nos. 7 and 8 were as fol-: Products of the forest, 1,403,174 tons; agriculture, 1,234,463 tons; manufactures, 47,910 andise, 27,798 tons; other articles, 449,152 tons; total, 3,162,497 tons.

No. 8.—*Statement showing the number of tons arriving at tide-water by way of the Canal, the produce of Western States and Canada.*

Years.	Products of the forest.	Agriculture.	Manufactures.	Merchandise.	Other articles.	Tot
1836	5,400	48,000	632	22	165	5
1837	7,637	47,546	323	148	601	5
1838	9,231	72,972	225	58	530	8
1839	28,644	91,369	241	102	857	12
1840	21,241	134,600	894	26	1,040	15
1841	45,398	173,437	3,175	42	1,639	22
1842	31,069	185,898	2,283	43	1,851	22
1843	36,775	214,655	1,822	34	2,869	25
1844	68,087	236,011	853	33	3,041	30
1845	91,235	296,422	2,565	49	4,280	36
1846	87,010	410,111	2,926	48	6,735	5(
1847	117,323	683,138	5,508	24	6,847	81
1848	142,433	489,478	5,424	136	12,683	6
1849	214,259	535,538	5,930	205	12,716	7(
1850	283,546	469,468	7,782	90	12,972	7
1851	281,505	656,352	14,370	181	14,585	9(
1852	336,892	778 816	21,642	1,070	13,556	1, 1
1853	444,080	727,655	21,838	1,517	18,600	1, 21
1854	380,677	677,698	10,640	1,922	25,379	1, 0
1855	346,215	751,940	9,539	700	24,769	1, 1
1856	335,797	856,147	2,138	713	17,755	1, 21
1857	436,604	516,755	9,357	721	24,942	9
1858	391,199	833,929	19,085	4,278	24,668	1, 2
1859	550,405	420,897	8,598	1,871	54,863	1, 0
1860	647,705	1,177,001	5,808	3,164	55,845	1, 8
1861	325,260	1,761,932	17,994	250	53,015	2, 1
1862	563,346	1,968,441	14,170	1,067	47,813	2, 5
1863	537,110	1,676,480	17,296	418	47,948	2, 2
1864	654,850	1,190,392	13,411	534	47,949	1, 9
1865	603,937	1,231,342	7,904	514	60,459	1, 9
1866	706,385	1,425,235	4,800	728	98,508	2, 2
1867	814,726	1,099,983	3,824	413	132,438	2, 0
1868	891,071	1,183,816	3,406	948	135,981	2, 2
1869	857,938	1,030,970	1,997	8	137,655	2, 0
1870	937,799	1,007,290	3,794	.....	100,064	2, 0
1871	816,802	1,539,243	2,235	.....	115,552	2, 4
1872	885,478	1,463,535	.....	.....	107,009	2, 4
1873	809,379	1,396,236	.....	2,324	151,516	2, 3
1874	719,609	1,400,993	23	2	79,737	2, 2
1875	490,000	1,130,156	563	301	43,036	1, 6
1876	493,995	875,079	151	14	33,529	1, 4
1877	623,788	1,336,884	2,756	.....	46,653	2, 0
1878	650,682	1,728,112	507	.....	71,630	2, 4
1879	586,843	1,567,774	472	.....	41,088	2, 1
1880	725,098	1,980,199	2,357	.....	93,628	2, 8
1881	817,663	971,583	2,121	597	12,156	1, 8
1882	865,920	943,538	.....	.....	14,671	1, 8
1883*	.....	.....	.....	.....	.....	.....

* Separate tables not kept in 1883 for Statements 7 and 8. The aggregate of Nos. 7 and 8 were as follows for 1883: Products of the forest, 1,403,174 tons; agriculture, 1,234,463 tons; manufactures, tons; merchandise, 27,798 tons; other articles, 449,152 tons; total, 3,162,497 tons.

: tonnage movement from 1836 to 1882, inclusive, is given in Table No. 9, as fol-

:

.—*Statement of the tons of property going from tide water, the tons arriving at tide er from Western States and from this State, the total tons arriving at tide water, the t of the internal trade of this State, and the tons of the total movement on all canals, from 5 to 1883.*

ars.	Going from tide water.	Arriving at tide water.				Total arriving at tide water.	Internal movement of this State.	Total movement.
		By way of Erie Canal.		By way of Champlain Canal.				
		From Western States.	From this State.	From Vermont and Canada.	From this State.			
. ....	133, 796	54, 219	364, 906	53, 853	223, 369	696, 347	480, 666	1, 310, 807
.....	122, 130	56, 255	331, 251	43, 546	180, 729	611, 781	437, 385	1, 171, 296
.....	142, 808	83, 233	336, 016	36, 330	184, 902	640, 481	549, 722	1, 333, 011
.....	142, 085	121, 761	264, 596	56, 308	159, 553	602, 128	691, 550	1, 435, 713
.....	129, 580	158, 148	309, 167	50, 900	150, 797	669, 012	617, 454	1, 416, 046
.....	162, 715	224, 176	308, 344	50, 909	190, 906	774, 334	584, 612	1, 521, 661
.....	123, 394	221, 477	258, 672	30, 515	155, 962	666, 676	447, 011	1, 236, 931
.....	143, 595	256, 376	378, 969	32, 126	169, 390	836, 861	532, 963	1, 513, 429
.....	176, 737	308, 025	491, 791	33, 974	185, 304	1, 019, 094	620, 755	1, 816, 586
.....	195, 000	304, 551	655, 039	33, 389	211, 964	1, 204, 943	577, 622	1, 977, 565
.....	213, 815	506, 830	600, 440	41, 852	213, 196	1, 362, 319	692, 528	2, 268, 662
.....	288, 267	812, 840	618, 412	51, 377	261, 654	1, 744, 283	837, 260	2, 869, 810
.....	329, 557	650, 154	534, 183	34, 528	229, 040	1, 447, 905	1, 018, 768	2, 796, 220
.....	315, 550	768, 659	498, 065	65, 471	247, 751	1, 579, 946	999, 236	2, 894, 732
.....	418, 370	841, 501	530, 358	124, 033	355, 155	2, 033, 863	624, 384	3, 076, 617
.....	467, 961	1, 045, 820	462, 857	80, 656	387, 818	1, 977, 151	1, 137, 621	3, 582, 733
.....	521, 527	1, 151, 978	492, 726	107, 941	482, 182	2, 334, 828	1, 107, 087	3, 863, 441
.....	584, 141	1, 213, 690	637, 748	129, 609	524, 750	2, 505, 787	1, 157, 914	4, 247, 852
.....	531, 831	1, 004, 391	602, 167	108, 848	412, 202	3, 223, 743	1, 410, 288	4, 165, 862
.....	504, 696	1, 092, 876	327, 839	99, 928	374, 950	1, 895, 593	1, 622, 828	4, 022, 617
.....	573, 733	1, 212, 550	374, 580	91, 254	445, 085	2, 123, 469	1, 418, 880	4, 116, 082
.....	340, 176	1, 019, 998	197, 201	92, 207	407, 781	1, 617, 187	1, 386, 698	3, 344, 061
.....	287, 073	1, 273, 099	223, 588	93, 069	395, 386	1, 985, 142	1, 392, 977	3, 665, 192
.....	317, 459	1, 036, 634	414, 699	122, 917	547, 422	2, 121, 672	1, 342, 553	3, 781, 684
.....	373, 735	1, 896, 975	379, 086	104, 150	474, 666	2, 854, 877	1, 421, 602	4, 650, 214
.....	340, 736	2, 158, 425	291, 184	53, 096	477, 442	2, 980, 144	1, 186, 755	4, 507, 585
.....	417, 623	2, 594, 837	322, 257	72, 601	413, 014	3, 402, 709	1, 778, 453	5, 598, 785
.....	456, 800	2, 279, 252	368, 437	198, 116	428, 922	3, 274, 727	1, 826, 165	5, 557, 692
.....	493, 913	1, 907, 136	239, 498	195, 532	466, 091	2, 805, 257	1, 558, 771	4, 852, 941
.....	458, 684	1, 904, 156	174, 205	202, 331	449, 489	2, 730, 181	1, 540, 759	4, 729, 564
.....	626, 974	2, 235, 716	287, 948	220, 890	561, 053	3, 305, 607	1, 842, 639	5, 775, 220
.....	792, 573	2, 129, 405	96, 707	206, 634	596, 949	3, 029, 695	1, 866, 057	5, 688, 325
.....	1, 067, 020	2, 215, 222	163, 350	193, 474	668, 760	3, 240, 806	2, 134, 399	6, 442, 225
.....	772, 201	2, 028, 568	229, 121	203, 876	634, 577	3, 096, 142	1, 990, 737	5, 859, 080
.....	940, 429	2, 048, 947	241, 751	244, 617	620, 987	3, 156, 302	2, 077, 038	6, 173, 769
.....	801, 538	2, 473, 832	175, 045	212, 054	634, 870	3, 495, 801	2, 170, 549	6, 467, 888
.....	926, 228	2, 456, 022	214, 383	261, 058	716, 481	3, 647, 944	2, 099, 198	6, 673, 370
.....	795, 117	2, 359, 455	225, 900	27, 895	763, 399	3, 376, 649	2, 193, 016	6, 364, 782
.....	753, 981	2, 200, 364	269, 933	193, 523	559, 292	3, 223, 112	1, 827, 495	5, 804, 588
.....	701, 253	1, 664, 056	250, 886	135, 115	558, 720	2, 608, 777	1, 549, 828	4, 859, 858
.....	745, 797	1, 402, 768	342, 552	128, 223	552, 639	2, 426, 182	1, 000, 150	4, 172, 129
.....	978, 991	2, 010, 081	287, 927	156, 150	532, 654	2, 986, 812	990, 160	4, 955, 963
.....	783, 150	2, 450, 512	381, 278	151, 081	654, 230	3, 637, 101	751, 060	5, 171, 320
.. ....	992, 434	2, 196, 177	349, 825	151, 913	588, 261	3, 286, 176	1, 083, 762	5, 362, 323
.....	1, 264, 179	2, 801, 282	425, 076	224, 437	616, 607	4, 067, 402	1, 126, 075	6, 457, 656
.....	1, 056, 196	1, 804, 120	389, 182	212, 179	680, 358	3, 065, 839	1, 057, 157	5, 179, 192
.. ....	1, 038, 003	1, 824, 129	278, 311	213, 422	752, 290	3, 068, 152	1, 361, 268	5, 467, 423
.....	982, 772	*2, 007, 786		*854, 370		3, 162, 497	(†)	5, 664 056

* Not separated. † Not reported.

To show the approximate time that transportation can be carried on yearly, the following statement giving for eleven years the dates at which navigation commenced at Buffalo, also the opening and closing of the canals, together with the number of days the canals were open, is submitted:

Years.	Lake opened.	Canal opened.	Canal closed.	No. days canal open.
1873	April 29	May 15	November 24*	203
1874	April 18	May 5	December 5	215
1875	May 12	May 18	November 30	197
1876	May 4	May 4	December 1	211
1877	April 17	May 8	December 7	213
1878	March 16	April 15	December 7	237
1879	April 24	May 8	December 6	212
1880	March 19	April 20	November 20†	215
1881	May 1	May 17	December 6	203
1882	March 26	April 11	December 7‡	241
1883	May 4	May 7	December 1	208

* Navigation unimpeded here for several days after this date, but no shipments made except to Lockport; navigation closed by ice east of Rome about the 24th; reopened from December 12 to 25 inclusive.

† The severe weather closed navigation twelve days before the official time. An immense amount of property was "frozen in."

‡ Official date. Twenty-seven boats were frozen in at different points.

It is quite interesting to note the rates of toll which have prevailed on the Erie Canal, and the years that the changes occurred in since the opening. A careful examination of old records enables me to present the following tables:

Average tolls on up freight (Albany to Buffalo) per 100 pounds, and down freight (Buffalo to West Troy) per barrel of flour of 216 pounds.

Years.	Albany to Buffalo.	Years.	Buffalo to West Troy.
	Cents.		*Cents.*
1826 to 1829, inclusive*	.....	1826 to 1829, inclusive*	.....
1830 to 1832, inclusive	51	1830 to 1832, inclusive	55
1833	44	1833	39
1834 to 1845, inclusive	33	1834 to 1845, inclusive	35
1846 to 1850, inclusive	24	1846 to 1850, inclusive	31
1851	22	1851 to 1857, inclusive	23
1852 to 1857, inclusive	15	1858 to 1860, inclusive	15
1858	7	1861	19
1859	3½	1862 to 1869, inclusive	23
1860 to 1863, inclusive	7	1870 to 1875, inclusive	11½
1864 to 1879, inclusive	5½	1876	7½
1880†	1	1877 to 1878, inclusive	4
1881 to 1883, inclusive	Free.	1879 to 1883, inclusive	Free.

* Records could not be found at the time of compiling this table. † About.

Tolls on down freight (Buffalo to West Troy) on wheat and corn.

Years.	Wheat 60 pounds.	Corn 56 pounds.	Years.	Wheat 60 pounds.	Corn 56 pounds.
	Cents.	*Cents.*		*Cents.*	*Cents.*
1826 to 1829, inclusive	16.06	15.00	1858 to 1860, inclusive	4.28	4.00
1830 to 1832, inclusive	14.99	14.00	1861	5.18	4.83
1833	10.71	10.00	1862 to 1869, inclusive	6.21	4.83
1834 to 1845, inclusive	9.74	9.00	1870 to 1874, inclusive	3.10	3.00
1846	8.57	8.00	1875 and 1876	2.07	1.93
1847 and 1848	8.57	6.00	1877 to 1882, inclusive	1.03	0.93
1849 and 1850	8.57	4.00	1883	Free.	Free.
1851 to 1857, inclusive	6.43	4.00			

llowing statement shows the average canal freights during the season of navi-
n wheat and corn (including tolls) from Buffalo to New York in the twenty-
specified:

Years.	Wheat 60 pounds.	Corn 56 pounds.	Years.	Wheat 60 pounds.	Corn 56 pounds.
	Cents.	*Cents.*		*Cents.*	*Cents.*
.....	15.39	12.14	1871	12.62	11.54
.....	12.52	10.97	1872	13.10	11.39
.....	12.80	11.18	1873	11.57	10.28
.....	14.94	13.43	1874	10.11	9.11
.....	15.75	14.43	1875	8.01	7.23
.....	15.84	13.76	1876	6.72	6.09
.....	15.39	13.39	1877	7.39	6.38
.....	18.78	16.55	1878	5.99	5.26
.....	16.84	14.67	1879	6.99	6.15
.....	17.27	14.42	1880	6.58	6.01
.....	15.69	13.82	1881	4.88	4.37
.....	15.65	13.01	1882	5.24	4.74
.....	16.31	13.86	1883*	4.90	4.40
.....	11.22	10.35			

* No tolls.

o record to hand at time of compilation of this table of the years 1826 to 1856, inclusive.

ffalo Board of Trade, followed by other commercial organizations, for many resolutions, appointment of committees, and other means, persistently kept ct of the imperfect condition of the locks, channels, tow-paths, bridges, &c., nals, the lack of efficiency of many of the employés, the uselessness of the ks, and other other hindrances to business, before the public, the canal d legislature of the State. Able and earnest friends of our water ways also subject matter alive and did noble work in hastening and perfecting meas- form. The newspapers were not behind in rendering able assistance.
cision of the State in the adoption of the constitutional amendment author- disposal of the lateral canals was entirely due to these persistent efforts, as the late action of abolishing the weigh-locks and useless collectors' offices, y the abolition of all tolls and many unnecessary officials.
ruary 20, 1875, the Buffalo Board of Trade issued an address, and among the nts urged looking to a "free canal" in the future, were the following:
ever may be the results of experiments made with steam on the canals, the f the canal steamboats is yet comparatively insignificant. There is only em to about two hundred and fifty other boats; therefore many years must y elapse before the change to steamboats can be made. Meanwhile trade is he canal and the State. The channel of diversion is deepened as the current if the trade is once permitted to leave this State, it will be impossible to ack again from more far-seeing rivals.
r these circumstances the time has come when the question is no longer how enue can be raised from the tolls, but how far they can be reduced so as to the cities and State of New York the great prize of Western trade absolutely to their commercial prosperity. The loss of this business implies not only olls, but also of the earnings of transportation and the profits of the grain ll its branches, together with the return trade by rail and canal in merchan- these items the commercial prosperity of the city and State of New York y depends. It can be satisfactorily demonstrated that the loss of revenue e State would sustain from the injury which would ensue to taxable prop- ie ruin of the great water thoroughfare of the State would be greater than cost of maintaining it.
lluding to the condition and prospects of the lumber trade, burdened with tolls, and the sharp competition of the railroads for this branch of the canal , and asking for a large reduction in tolls on all products, as absolutely neces- able the State of New York to retain its supremacy as the great distributing the Western products of all kinds, it concluded as follows:
lso request you to ask permission of the legislature to abolish all tolls on mer- and other westward bound freight, believing that the low rates at which d then be carried would bring back to the canal a large amount of business s already left it, and would, by enabling the carriers to take eastward-bound lower rates, practically increase the tolls and revenue of the State.
ring also that the cost of maintaining the canals can, without injury to any est, be materially reduced by abolishing all weigh-locks and many collectors' respectfully suggest the expediency of abolishing the weigh-locks and

such of the collectors' offices as in the judgment of your honorable board may appear to be useless. Weigh-locks are not only needless but occasion great loss of water and inflict serious damage on the boats and detention of them.

"After devoting considerable attention to the subject, we find that no weigh-locks exist in any part of the United States or Canada, except on those of this State, and that the quantity of the cargo can be justly and satisfactorily ascertained without them."

In 1869 a great State convention was held in Albany, and in 1870 another in Rochester, which were eminently successful in inaugurating a solid, substantial, and lasting reform of the canal policy of our State. Partly by these efforts the contract system was done away with and the various abuses which had prevailed for many years were abolished.

The amendments to the constitution relative to the canals of the State, which received the concurrence of the legislature in 1881 and 1882, were approved by the people at the election in 1882 by a majority vote of 310,915; the vote was 495,993 for and 185,798 against. The amendments came into operation January 1, 1883. No tolls are now levied upon the commerce of the canals; but the boats navigating them, and the owners and masters thereof, are subject to such laws and regulations as may be necessary for their management and the maintenance of good order thereon. The legislature is authorized, by equitable taxation, to make provision for the expenses of superintendence and repairs and for the payment of the principal and interest of the debt. The amount of such tax *pro rata* will be so small as to be almost unnoticed. The clause in the constitution by which the expenditures for ordinary and extraordinary repairs were limited to the amount of the previous year's income was abrogated at the same time.

"The amount appropriated from the revenue of the canals for the fiscal year ending September 30, 1883, to pay the cost of collection, superintendence, and ordinary repairs, was $818,264.21," says the late auditor. From October 1st to the close of navigation in 1882 only $271,000 was left to pay this appropriation; therefore provision must be made, by a tax or otherwise, to meet the deficiency or such amount thereof as may be required for the remainder of the current fiscal year. The auditor further estimated that the following sums would be required for the fiscal year of 1883–'84:

For interest on the canal debt	$500,310
For sinking fund for the extinguishment of the principal of the canal debt	450,000
For superintendence and ordinary repairs	650,000
Total	1,600,310

Total amount of canal debt outstanding on the 30th September, 1882	$8,983,360 00
Less balances of sinking fund when applied	2,723,698 57
Net amount of debt	6,259,661 43

The debt is now held as follows: In the United States, $8,017,900; in foreign countries, $958,800, these sums are at interest at 6 per cent. per annum. The amount not paying interest, $6,600; grand total, $8,983,360. The total sum required for interest, $538,602 annually.

It may be well to take note of the fact that the Erie Canal can never become a monopoly or be controlled by combinations; therefore for seven months in the year it is the great regulator of the rates of through transportation by railroads in this and the neighboring States and also in the Dominion of Canada.

Doubtless, at no distant day, the subject of water transportation on the Erie Canal will receive the attention of capitalists; and its geographical position, advantages, and conveniences for handling produce of all kinds will be more and more apparent. The products of the great West will continue to seek this water-way in ever-increasing volume, adding to the wealth and prosperity of the empire State, notwithstanding the competition of railroads. With the build and capacity of the boats changed, let the State deepen the channel and enlarge the locks; then with improved machinery and other appliances, rapid steam transit will be secured permanently at almost a nominal cost, defying the cheapest of all cheap routes to the seaboard notwithstanding.

The cost of transportation has gone down because the business of the country demanded it, and the State, by first lowering and finally abolishing the tolls on the Erie Canal, has forced railroads to carry freight at very much less charges than prevailed a few years since.

The movement of property by the Erie Canal so far fully vindicates and justifies the policy of abolishing the tolls upon it, and encourages a further enlargement of its

ks and the prism of the great work so as to adapt it more fully for steam navi-
ion and thus cheapen the cost of transportation upon it.
'he legislature of 1883, by act abolished the office of canal auditor, the land ap-
isers, also the canal collectors. The act repealed all laws and regulations relating
uch officials and deprived the canal board of the power of appointing them. The
ıe legislature then passed another act simply authorizing the superintendent of
lic works to collect canal statistics and report the result annually on February
Instead of "canal collectors" the State has "collectors of canal statistics" to
ıer the necessary information relative to the commerce of the canals.
he question of the practicability of substituting steam for mule power on the
ıls is substantially settled in the affirmative and, in the near future will doubt-
y be fully developed. The first steam canal boat of any practical value for navi-
on purposes was the Charles Wack, built in Buffalo in 1858. Many have since
ı constructed and run with various kinds of contrivances, such as the propeller
w, also with propeller screws at each side of the stern or at the bows, sidewheels,
less buckets, &c., each inventor thinking that his plan was the best and would
ıplish the desired end with speed, economy of fuel, &c. There was a great loss
arrying capacity in nearly every instance, owing to the space occupied by the
hinery, and also by the great weight thereof. Large sums of money were spent
:hese endeavors to overcome the difficulties attendant upon steam navigation.
hout a consort the experiments with steam propulsion proved considerably less
ıomical in financial results than by mule power, mainly owing to the limited size
ıe boats.
r. H. Boynton, of New York, says that "mechanical inventions to adapt steam to
heavy resistance of canal boats is the first and great necessity of the canals;"
the second is "an auxiliary and co-operative power at the locks and short
ls; these must be local, and may be by stationary steam power or by water power
ı the upper levels or by horses or mules."
ıe Belgian system of towing by laying an iron chain cable along the bottom of
canal with the ends properly anchored at suitable points and using peculiarly
tructed tow-boats, was tried for several years, but was abandoned in 1882, with
iderable loss to the projectors. The plan proved a failure in consequence of the
ow channel, the numerous locks, and the bends in the canal in many places being
ırtuous that the tow of boats became unmanageable, causing considerable damage
ıe banks and the crafts navigated by mule power.
October, 1872, a number of boats were tested between Syracuse and Utica by the
nissioners appointed by the State under the act of 1871, in pursuance of the terms
conditions annexed to a proposition to award $100,000 for the best plan of profit-
"introducing steam, caloric, electricity, or any other motive other than animal
ər for the propulsion of boats" on the canals of the State. The commissioners
led that none of the competing boats had met the requirements of the proposi-
before named, but recommended the passage of a bill giving $35,000 to Mr. Will-
Baxter, of New York City, on condition that he put on the canal seven boats
ar to the last one constructed by him; and it was also recommended that $15,000
aid Capt. D. P. Dobbins, of Buffalo, on condition that he put three boats on the
l like the one which he presented for competition during the year 1874. The sum
0,000 was thus awarded and really lost to the State as far as any advantages that
ned, as the boats were hardly any better than others which preceded them.
ith regard to the improvements necessary for navigating the canal, I make the
wing suggestions: Measures should be taken to facilitate the movement of boats
ugh the locks, thereby saving much time. Modern appliances and engineering
l should be brought to bear upon the details of transportation upon the canals,
he primitive system of 1825 continues in 1883, with the exception of the advent of
v steamboats and their consorts. [Cable towing has proved a failure, and berme
ı traction is almost universally ignored and ridiculed.] The Illinois system of
ple boats, the steamer pushing the consort instead of drawing it, is a step in the
t direction. The water way should be deepened at least 1 foot, making the canals
ə available for steam navigation, and thus eventually doing away entirely with
ıse of mule power. Boats should be constructed of improved pattern and of in-
sed tonnage, giving greater speed, and by cheapening freights add materially to
:onnage of the canal and decrease the cost of carrying. Further, dredges should
ırchased and owned by the State, and they should be kept at work all summer,
ɔving the material that accumulates at the bottom of the canal from sewers, from
ıets, and from offal and rubbish generally. Up to this time the repairs and the
ning out of the canal have been made, with few exceptions, in the short period
ween the thawing of the ice in the spring and the commencement of navigation.
improvement alone would have an advantageous effect on the channel and the
would be comparatively trifling considering the benefit that would accrue.
ıe improvements deemed necessary on the canals to increase their efficiency have

been very clearly stated and recommended by the State engineer and surveyor, Horatio Seymour, jr., in his report to the legislature, presented January 12, 1881. He says:

"That large vessels can carry their cargoes cheaper than small ones is seen by the fact that vessels carry grain from Chicago to Buffalo for one-half the cost of carrying it from Buffalo to New York, although the former distance is twice the latter. It is four times as expensive to transport grain upon the Erie Canal as it is upon great bodies of water. In order to cheapen transportation upon the Erie Canal the boats must be able to carry larger cargoes, and to bring this about we should make the canal deeper. If 1 foot of water is added to the depth of the canal by raising its banks, the present boats can carry 50 tons additional load, and the relation between the size of the boat and the size of the canal will not be disturbed. This increase in depth would enable the boats to carry one-fifth more cargo.

"At the present rate of carrying it would cheapen transportation 1 cent a bushel, which would be equivalent to removing tolls. This plan of deepening the canal recommends itself to the boatmen because it requires no outlay on their part, the boats now in use having a capacity for 50 tons more than the present depth allows them to carry.

"If no additional load was carried this increase of depth, with the application of power to the locks for operating the gates and drawing the boats in and out, such as is in use in New Jersey, on the Delaware and Raritan Canal, would enable boats to make thirty-seven hours better time in a round trip from Buffalo to New York. This gain, in many instances, would enable boatmen to make another trip a season. There is no sentiment in trade. Business goes where it can be done the cheapest, and the route that can carry for a few mills per bushel less than any other will command it. The average freight, not including tolls, of a bushel of wheat from Buffalo to New York during the past season has been 5¼ cents; if this charge could be reduced to 4¼ cents the Erie Canal could offer such economical transportation that there would be very little danger from its northern rival (the Welland Canal). I have had careful surveys made for the raising of the banks of the canal 1 foot and for furnishing the necessary water. These show that the work can be done for about $1,000,000. The gain that this improvement would have made in transportation during the past season would be equal to the cost of the work."

Mr. Van R. Richmond, an engineer, wrote as follows in response to an inquiry made to him relative to the plan of Seymour's for enlarging the canals: "I have to say that I think it is practical to raise the surface of the water in the Erie Canal 1 foot by raising the banks and to lower the bottom 1 foot, except over the culverts and aqueducts. The lower miter sills of the locks must, of course, remain as they now are. I am confident that a full supply of water could be obtained."

The well-known Mr. George Geddes, an eminent engineer of Fairmount, Onondaga County, New York, gives his opinion on the enlargement of the canals to Mr. Seymour in the following words:

"The facts determined put at rest all doubts as to the policy of our State in regard to the great canals. Let the banks of the canals be raised 1 foot and the bottom lowered (except over the culverts and aqueducts) another foot, and the two boats, by the 'Illinois system,' would carry about 600 tons, making nearly or quite 3 miles an hour, and having a crew of not more than seven persons, counting the cook. I trust that our legislature may have this matter so fully set forth by you and others charged with the interests of canals that speedy action may be had that will in the shortest period possible perfect these improvements.

"For myself, I would very much wish to have the locks widened to 24 feet, in addition to increasing the depth of water, and the surface of the water in the canal widened to 80 feet where practicable; but these are improvements that will follow the deepening in the proper time.

"The engines must be on the boats, and be able to move them backward as well as forward, and for this reason, if for no other, all schemes of railroads on the banks of the canal or cables laid along its bottom to move boats have appeared to me idle, and but divert the public attention from a full investigation of the true plans of improving our means of transportation. * * * It is passing strange that our State has not introduced the modern appliances for opening and closing lock-gates and for drawing boats in and out of the locks."

The State auditor in his report for the year ending September 30, 1882, says, in reference to how steam canal boats can be made successful on the canals, that it is only necessary to increase the capacity of the locks so as to permit the passage of boats 20 feet longer than those now employed; further, that a suitable model boat should be constructed and none others allowed. He also gives as his opinion that the additional length of the locks would enable steamers to be constructed that would carry as much cargo as the largest of the present mule boats, and that the best results as regards speed and economy could be thus obtained; and in order to increase the capacity of the locks and facilitate the passage of boats through them no addition to the masonry of the present locks is necessary except at the combined locks at

rt. He then goes on to say that by placing tumble-gates at the upper end of ent lock masonry and retaining the present beam-gates at the lower end, the r of each lock would be lengthened 23 feet. This simple improvement would he passage of boats 23 feet longer than those now in use. He continues thus: tumble-gate, besides increasing the capacity of the lock, is a vast improve- er the present balance beam-gate, for it works almost automatically, and its s more speedy. By the insertion of suitable machinery, already devised and he present lower gates can be operated mechanically and at greater speed.

five combined locks at Lockport present no obstacle to this plan of improve- ut would require different treatment from that pursued at the single lock. thod of changing the slope, briefly stated, would be this: The walls would be partially taken down. Commencing with the first lock (or upper one of bination) the walls thereof in relaying would be extended 23 feet over the ion walls of the second lock; the walls of the second lock then remaining e extended 46 feet over the foundation walls of the third lock; the walls of d lock then remaining would be extended 69 feet over the foundation walls of rth lock; the walls of the fourth lock then remaining would be extended 92 r the foundation walls of the fifth lock, and what remained of the fifth lock equire to be extended by the construction of about 100 feet of new wall. At d of the first lock the tumble-gate would be employed as in the case of the ock, and the present beam-gates would be retained at the lower end of each the combination."

en shows what the improvement will cost, when it can be completed, and he funds are to come from in the following words:

estimated that one tier of locks from Albany to Buffalo, on the Erie Canal, eighteen locks between Syracuse and Oswego, on the Oswego Canal, can be ed in the manner suggested, making a liberal allowance for engineering ex- nd contingencies, at a maximum cost of $700,000. There are on the Oneida anal six enlarged locks of recent construction, from which, in close proximity Erie Canal, all the dressed stone necessary for use at the combined locks at rt could be taken, which, if used, would reduce the estimate by the value of e, or make it amply sufficient to cover the cost.

his legislature should authorize the improvement and make the necessary iation, plans could be prepared and contracts let in season to secure the com- of the work by the opening of navigation in the spring of 1884.

re is now in the treasury an unexpended balance of $510,797.54 to the credit of nd for extraordinary repairs,' which was originally raised and appropriated for pose of improving the canals, but its expenditure was arrested by the constitu- mendment of 1874, limiting the total expenditures on the canals in each year mount of their earnings in the previous year, but by the recent amendment itation has been removed. There is also due this fund a balance of $199,182.11 erest thereon, which was temporarily appropriated, by section 2 of chapter he laws of 1881, to make good a failure in the revenues of the canals for that pon the condition that it should be subsequently restored from the revenues. n of $510,797.54 is, however, immediately available, and can be appropriated improvement, which would leave less than $200,000 to be raised by tax.

the simple plan which is here briefly outlined, and at such moderate cost, steam successfully established on the Erie and Oswego Canals, and the time now re- to make trips can be reduced one-half. This increase of speed would double acity of the canal and materially reduce the running expenses of the boat."

views of ex Governor Horatio Seymour, in a letter published during the discus- the "free canal question," thus expresses his sentiments on a proposal made nder the canals of the State to the General Government, and are well worthy d:

as been proposed to surrender our canals to the General Government, if it will and keep them in repair. The advocates of this overlook the fact that it will m under the control of influences which are striving to divert trade to rival Baltimore, Philadelphia, and Boston will have in the East the influence of wo members of Congress to aid them in their designs, while New York will it thirty-three. In the Senate, New York will have but two members, while l cities will control sixteen members. This statement does not include the mber of other members who seek to turn the current of transportation down ssissippi. We have had abundant evidence in judicial decisions and in Con- al schemes of a desire to wrest the control of our canals from our State.

ay be said that this is giving our canals too much credit for their influence, of the fact that this tonnage is less than that of the railroads; but their not shown merely by the amount they transport and the low rates at which ry products; we must also bear in mind their influence in reducing the charges ther routes. So long as they are kept in good condition, we shall be saved e evils of combinations or unjust discriminations against our State. If they

do not carry a pound of freight, it would be wise to keep them in order, so that they would be ready for use to defeat unjust and hurtful charges against the business of New York.

"The chief element in the prosperity of every State or nation is the economy of transportation of persons and property. It is the most marked fact in the difference between civilization and barbarism."

The last paragraph should be written in letters of gold.

WM. THURSTON,
Buffalo, N. Y.

JUNE 28, 1883.

Received, and figures brought down to 1883.

W. T.

AUGUST, 1884.

To the Hon. George Clinton, Chairman of Committee on Canals:

I am not able to go to Albany to attend a meeting of your committee. I therefore take the liberty of writing to you this letter about our canal policy.

Most of those who have spoken or written about the canals of this State have left out of view many of the great reasons for making them free of toll. It was not only to increase the tonnage upon them; it was to cut down the cost of carrying, so we could export to other countries our products. So long as our canals keep down the rates, the public gain great objects which concern its interests. It is important that those who are engaged upon our water-routes should receive a fair compensation. When the late constitutional amendment of 1882 was proposed it had in view a greater evil than the rates of toll. The constitution as it then stood compelled the State to abandon the canals if for any reason the tolls of any one year should not be equal to the cost of keeping them in repair. If floods should check navigation it would stop all receipts. The constitution as it then stood checked boat-building and all investments in canal commerce, because no one would put their means in any pursuit subject to such disaster. This liability was surely destroying our public works. To remove this danger was one of the purposes of the friends of the amendment. While a deep interest was felt for the welfare of those engaged in canal commerce, the public at large were more concerned in promoting the prosperity of our State and the interests of all classes of our citizens engaged in every variety of pursuits. There was no spirit of hostility to railroads. It is not true that railroads and water routes are antagonistic. While they compete in some respects, in many others they promote mutual interest by building up the general prosperity of the country. We have proof of this in the fact that the most prosperous railroads run parallel to water routes. Of the hundred principal cities of our country nearly all are built at places where they have the advantage of water routes. These cheapen the cost of building and furnish at the lowest cost the crude articles which give employment to mechanics and laborers. To convert rough and coarse materials into useful articles adds many times to their value and gives profitable work to our people. All crude materials are best carried by water routes. Twenty thousand dollars of black-walnut lumber will make one hundred thousand dollars of furniture. Railroads are best fitted for passenger traffic and many kinds of light freights; on the other hand coarse and heavy articles needed by the industries of our country require water routes. To avoid ruinous competition railroads are forced to make pooling arrangements. These are necessary for the public to avoid frequent and hurtful changes in charges growing out of controversies about rates, which harm not only the roads, but also embarrass the business transactions of our citizens.

But there is danger that the rates fixed upon by railroad managers will be too great, as they will be urged by stockholders and speculators to put them up. Where there are water routes this will be prevented, for the boatmen cannot be drawn into pooling arrangements on account of their numbers. If they should go into them they would merely call into existence more boats which are cheaply built.

Few are aware of the great increase each year of the internal commerce of our country. Forty years ago when the Erie Canal, the Hudson, and the lakes made the only great through route between the sea-board and the West (while we had few railroads they did not make through routes) it was urged by able men that the tonnage upon the canal would diminish in consequence of the cutting off of our forests. The tonnage of the Erie Canal in 1843 was about 1,500,000 tons. This included all local as well as through rates. After that the State allowed the roads running parallel to the canals to carry freights free from any charges for tolls which at one time they were subject to. At present there are seven or eight railroads in New York and other States competing with the water routes and carrying annually over 70,000,000 of local and through tonnage, yet the tonnage of the Erie Canal is nearly four times as great as it was in 1843, when with the Hudson River and the great lakes it made the only through channel of commerce between the sea-board and the Western States. There is no

son why this rapid increase of tonnage will not continue hereafter; if it does, our sent canals and railroads will not be able to meet the demands upon them.

t pays the people of the State of New York to keep up its canals without regard the amount they carry, as they will thus check undue exactions, and will save the te from the scandals that grow out of the presence of a lobby employed to shape islation. Members of legislature change from year to year, but the lobby is a per-nent body familiar with and skilled in all the methods of legislation.

Vater-routes do not merely regulate charges upon railroads near their courses, but on all parallel roads at a great distance, as under pooling systems their charges st be equalized. Prior to 1870 many looked upon lowering of canal tolls as hurt-to the interests of railroads. On the contrary, they proved to be of great benefit all routes of commerce. Of this we have striking proof in the reports by the Gen-l Government with regard to the commerce and navigation of the United States, luding the year 1882. It shows that from 1835 to 1873, a period of thirty-eight ars, the balance of trade was against our country, except during eight years. This ught upon us the commercial disasters which culminated in the year 1873. After policy of low tolls was adopted by a series of reductions, the balance of trade for past eight years has been in our favor. In 1883 it amounted to $100,658,488. The lances of trade in favor of this country since low tolls have existed have given sperity to business of all kinds in every part of the State. This change added mensely to the value of railroad stocks as well as to the prosperity of all classes d pursuits of our State. It is only necessary to show this by comparing the value railroad stocks and other forms of property which prevailed in 1873 with their lue and profits at this time. It will be seen that as freight charges were reduced, ey turned the balance of trade in our favor. The cost of maintaining free canals a small matter compared with our gains from a wise policy of toll reductions. It sts the people no more to keep up the canals by taxes than it does to keep them up tolls, which is taxation in an unjust way. If the Government of Europe were to t tariff taxes upon our products equal to the charges we once used to put upon them their way to the sea-board from the interior, they would cause great alarm and stress, yet our own charges were more hurtful than an equal amount taxed upon em by such tariffs, for these would have to be paid by our competitors in other rts of the world as well as by ourselves, while our home charges fall only on our me productions. This puts in a strong light the folly of tolls upon carrying. hen we cut them down we gave to our people a prosperity unknown before, and nich attracts the attention of the world.

At this time there is some depression owing to overaction on our part in building ilroads, but this will soon pass away.

Heretofore the population of our country has doubled in numbers in about twenty-ree years. If we assume that it will now take thirty years from 1880 to give us 0,000,000 of people, it will be a safe estimate, as immigration is unusually large, r numbers will amount to 100,000,000 in less than twenty-seven years, as more than ree years have passed since the census of 1880. This rate of progress will soon make cessary more facilities for transportation. Unless we are willing that our State shall ik from its present commercial eminence we must keep up our canals to prevent the version of its trade to other sections. Their importance is felt elsewhere if we do t value them as we ought. There are evidences of designs to get control of them rough the General Government. When the Erie and Champlain Canals were made e General Government and adjoining States to New York refused to give any aid for eir construction. And our State made them for the benefit of the Great West as ell as for itself at its sole cost and hazard. We must keep them in our charge if we ould keep up the prosperity of our State. In thirty-eight years before 1876 our ex-rts to Europe, with some exceptions, were less than our imports. When by a series reductions we cut down the tolls to a low rate, which reductions were followed by e railroads and other routes, our exports were enormously increased, as will be own by the tables taken from the reports on trade and navigation of the General overnment, a document of great value, prepared under the directions of Hon. seph Nimmo, jr., chief of bureau. The following tables show the balance of trade ainst us before tolls were cut down and the balance in our favor since the low-tolls licy was adopted.

Balance of trade against us from 1866 to 1875 under high tolls.

Years.	Exports.	Imports.	Excess of imports over exports.
1866	$348,859,522	$434,812,066	$85,952,544
1867	294,506,141	595,761,096	101,284,955
1868	281,952,899	357,436,440	75,483,541
1869	286,117,697	417,506,379	131,388,682
1870	392,771,768	435,958,408	43,186,640
1871	442,820,178	520,223,684	77,403,506
1872	444,177,586	626,595,077	182,417,491
1873	522,479,922	642,136,210	119,656,288
1874	586,283,040	567,406,342	.....
1875	513,442,711	533,005,436	19,562,725
			836,306,372
			18,876,698
Balance against us in ten years			817,429,674

There was an excess of exports over imports in 1874 of $18,876,698.

Value of the exports and imports with low tolls.

Year.	Exports.	Imports.	Excess of exports over imports.
1876	$540,384,671	$460,741,190	$79,643,481
1877	602,475,220	451,323,126	151,152,094
1878	694,865,766	437,051,532	257,814,234
1879	710,439,441	445,777,775	264,661,666
1880	835,638,658	667,954,746	167,683,912
1881	902,377,346	642,664,628	259,712,718
1882	750,542,257	724,639,574	25,902,683
1883*	823,839,402	723,180,914	100,658,488
			1,307,229,276

* Nine months.

Balance in favor of this country, $1,307,229,276 under low tolls.

The reasons for this great change in our favor will be seen by looking at the changes in freight rates during the past sixteen years. Average freight charges per bushel for transportation of wheat from Chicago to New York since the year 1868, and also from New York to Liverpool for the same time.

Average rates per bushel.

Years.	Chicago to New York.			New York to Liverpool.	
	By lake and canal.	By lake and rail.	By all rail.	Steamer rates.	Sailing vessel rates.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*
1868	25.3	29.0	42.6	14.36	.....
1869	24.1	25.0	35.1	12.98	.....
1870	17.5	22.0	33.3	11.56	.....
1871	21.6	25.0	31.0	16.32	.....
1872	26.6	28.0	33.5	15.28	.....
1873	19.2	26.9	33.2	21.12	19.82
1874	14.2	16.9	28.7	18.16	15.66
1875	11.4	14.6	24.1	16.14	14.24
1876	9.7	11.8	16.5	16.04	15.28
1877	7.5	15.8	20.3	13.86	13.52
1878	10.1	11.4	17.7	15.22	14.18
1879	13.0	13.3	17.3	12.40	11.80
1880	13.2	15.7	19.7	11.76	10.20
1881	8.6	10.4	14.4	8.16	9.50
1882	8.7	10.9	14.6	7.76	.....
1883*	9.16	12.0	16.1	9.08	†12.50

* January 1 to November 1, 1883. † Six months, January 1 to July 1.

s table shows that the water routes have always led in reductions. The lake
nal rates include charges at Buffalo. Since 1868 the freight charges for a
l of grain from Chicago to Liverpool have been cut down over 20 cents.
I. Walker, esq., statistician of the New York Produce Exchange, informs me
gh Mayor Edson, New York, that ocean freights are now still lower, "and that
has never been a period in which ocean freights to the world have been so
as at the present time." This is due to the competition on our freight products
hey have grown so large from the reduction of our tolls and charges.
lse and mischievous idea has grown up in our country that Europe depends
is for food. This is not true. They can get all they want from many parts of
rld; from India, from South America, and Australia. In South America vast
of cattle are killed merely for their hides. The carcasses are left to decay.
Britain, which buys more of our provisions than any other country, is build-
ilroads in Northern India to cheapen transportation, and is sending farming
nto that region to improve its agriculture. This policy has been followed by a
increase in its production of grain. Within a few years the exports of wheat
ndia have grown up to many millions of bushels. The governments of Europe
ving to lessen our exports as they give us such heavy balances against them.
is reason Germany and France shut out our pork, and other governments show
uneasiness, as we disturb their relationship to their people. Our only course
ndersell other countries; as labor is higher here than elsewhere, we must de-
pon smaller charges for carrying. That region is fast becoming one of our
; competitors. We only sell to Europe because we have cheaper modes of send-
r products to their markets. We have been able to do this because we have
wn the cost of carrying. Our exports grow up as carrying rates are cut down.
ads have always followed lower rates upon water routes, but the last are the
st, as is shown by the table of rates in the report on Commerce and Navigation
General Government. Our agricultural interests are the most important of all.
water routes are closed by winter, railroad rates go up; when they are opened
ing, rail rates go down. It is true that it costs more to carry in winter than in
er. I do not know if the advanced rates are based solely upon this increased

natural that the people of the State remote from the canals should at first view
at keeping up the canals by a State tax was unfair to them, but official state-
will show that the policy does not increase their taxes, but it cuts them down.
ust bear in mind that while the General Government taxes fall mainly upon
al expenses, clothing, &c., the State taxes are put upon real estate and other
of property. After these taxes are paid into the State treasury they are divided
e benefit of the people of the counties according to their population. The cities
v York and Brooklyn pay more than half of the State's taxes while their num-
re less than one-third of the population of the State. The counties of Saint
nce, Franklin, Delaware, Chautauqua, and Cattaraugus are most remote from
nals. The cities of New York and Brooklyn, which are benefited by free canals,
ore to support the schools of these counties than their inhabitants. They also
ore to their senators and members of the assembly for their judiciary and State
than do the people of these counties. These five counties got from the State
ry for State expenses in 1877, $234,070.37 more than they paid. I think they get
ore at this time. The comptroller's report will show how this is. This sum is
paid by New York and Brooklyn. When by free canals we give wealth and
rity to those parts of the State benefited by the canal we increase the amount
ir assessment and reduce the tax on the other parts of the State. These coun-
e not made poorer but richer by the general prosperity of the whole State and
ter home markets. I do not speak of this plan of taxation to show that it is un-
it is not; but to show that all parts of the State have common interests, and
helps one section benefits all. This plan is a fair mode of equalizing the bene-
public works between the commercial and agricultural parts of the State. The
r the taxes on the canal counties the less they are in other parts of the State.
en New York abandons its canal it will sink from its high commercial position.
e no interest in this subject besides my interest in all things that concern the
and welfare of the State. I have seen the progress of its commerce from the
when trade between the sea-board and the western part of the State was forced
shallow waters of the Mohawk or was carried by wagons over the rough roads
then thinly settled country. At one time we appealed in vain to Congress and
ing States for aid to make a water-way for the benefit of our whole country as
s for ourselves. It was refused. Our public men of that early day went boldly
d built our canals and lifted our State to its high position as the great State of
nion. It was regarded, not only in this country but in Europe, as a great
rement, and our canals were visited and examined by the agents of different
n governments. At a later day our carrying facilities were reenforced by rail-

We are now able, if we are wise, to overcome the greater cost of production

in our country, owing to our higher wages, by our cheaper transportation. We are to have a hard struggle to keep our lead as a food supplying country, and we must give up the delusion that Europe depends upon us for food. It will only buy of us if we can deliver it to them at the lowest cost. The delusion that the Old World depends upon us for food stimulates extravagance in Congress and corruption in legislatures. If we fail to uphold our water routes as protection against unjust and unwise charges for transportation we shall suffer in the future.

I am, respectfully, yours,

HORATIO SEYMOUR.

The majority sentiment is that the National Government should lend aid to enlarge the Erie Canal; the ownership of the canals and their control remaining in the State of New York, the State maintaining them free.

Mr. Denison B. Smith, secretary of the Toledo Produce Exchange, in his report for 1883, makes the following observations on the subject of

WATER TRANSPORTATION.

"In my last report I commented upon the general result upon the grain traffic of the West of the entire abolition of tolls on the Erie Canal. It is highly gratifying to be able to state that this munificent concession of the State of New York to the great producing interest of the Western world, has been marked, in the grain movement of the past year, by the most pronounced favorable results. The increased tonnage transported fully illustrates my statement. In 1883 there were shipped from Buffalo by canal 42,609,204 bushels of grain compared with 29,683,880 bushels in the previous year. In the ratio of this enhanced movement so has it lent to the lake ports the potent influence that has aided in drawing thereto the grain for lake shipment. A free water highway to the sea-board, in cheapening and regulating the rates of transportation for Western producers, is of inestimable worth. No Western farmer can assert that his crop of wheat or corn is not appreciated in value 10 cents per bushel by the maintenance of the Erie Canal and its salutary restraint over the whole question of transportation. But the question assumes a higher and national importance when we consider that this cheap transport to the sea-board is quite indispensable to the export of our products in competition with the increased and cheapened productions in India, South America, and Russia.

"It is to be regretted, however, that as one consequence of the absence of revenue, considerable difficulty was experienced near the close of the season in navigating the canal on account of the neglect of the authorities to maintain the necessary repairs. If this may be assumed to be the result of the concession of tolls, it follows that in a short period the canal must be unfit for use. Such a contingency would be disastrous to Western interests. The State of New York cannot be expected to maintain a free canal at a great yearly cost, with widely resulting benefits to the commerce of the whole country, and especially to all interests west of Buffalo; and I am decidedly in favor of such appropriations by the General Government to the State of New York as will fairly aid in maintaining this great commercial avenue. I am glad to notice that a bill has already been introduced in Congress by Hon. J. D. Wemple covering this purpose."

Mr. George S. Hazard, a prominent citizen of Buffalo, and for several years the president of the Board of Trade, published in December, 1872, a pamphlet on the Erie Canal, arguing upon its national character and in favor of making it a national work. Containing as it does the views of the majority of the commercial men of that city at that time, and from which little deviation has since been made, it is herewith appended:

[Published by order of the Board of Trade of Buffalo, N. Y., December, 1872.]

The Erie Canal; its national character; its through and local trade compared. An argument in favor of making it a national work. By George S. Hazard.

The subject of inland water communication and the maintenance and improvement thereof is admitted by all thinking persons to be a matter of great importance to the producers of the West and to the consumers of the East. But there is a great difference of opinion as to how the artificial water routes should be improved. Some think that works of a national character, like the Erie Canal, ought to be improved by the General Government; others, that the States through which they pass should bear the burden of their improvements, while still another class maintain that the commerce seeking transport over them should be made to pay the increased expense by a system of tolls or taxes.

This diversity of views, with reference to the proposed enlargement of the Erie Canal is seen in the newspaper discussions, in the speeches of public men, and in the

published deliberations of commercial bodies. The resolutions which were submitted to the National Board of Trade by the Buffalo Board took the ground that any canal over which the products of several States are transported should be considered national in its character, and, this being true of the Erie Canal, that the General Government should take upon itself the work of enlarging this great internal commercial highway. But the action which followed the introduction of these resolutions is a good illustration of the variety of views entertained, and it also shows how strongly prejudiced the people of the same sections are against the Erie Canal.

Mr. Gano, of Cincinnati, offered an amendment, in which he admits the national importance of enlarging the Erie Canal for the purpose of facilitating commerce and cheapening transportation between the interior and the sea-board, but he attached, as a condition precedent to such an undertaking by the General Government, that the State of New York should be divested of all ownership and control of the canal, and that its management should be vested in trustees, one from each of the States of Massachusetts, New York, Ohio, Michigan, Indiana, Illinois, and Wisconsin, and one to be appointed by the President of the United States. Mr. Gano did not propose that the Government should appropriate a dollar to make the canal a free commercial channel. On the contrary, after obtaining possession and completing the enlargement, he proposes that the Government shall reimburse itself from tolls on the tonnage. A proposition of this character would find no lack of supporters in Congress, but, in my opinion, if carried out, this great highway of traffic would soon, under political manipulation, become a tremendous maelstrom for the people's money and a great commercial failure. The report of the executive committee of the same body, to which the Buffalo resolution was referred, was in some respects similar to the amendment of Mr. Gano, and was as follows:

"*Resolved*, That, in the judgment of the executive council, if any proposition be entertained by the National Board of Trade looking to an appropriation by the United States of money or credit in aid of any work within the limits of a particular State, it should be shown that such State is ready to abandon entirely to the General Government any and all interest it may have in and the entire jurisdiction over and control of such work altogether, with the free and unrestrained right of way and a release of all private ownership."

The views of the council are certainly applicable to some cases, and especially to that of the Fox River and Wisconsin improvement, a work projected many years since by a private company, which company, after receiving a handsome subsidy from the Government in money or lands, perhaps both, failed to complete the work. Recently, however, under an act passed by the last Congress, the value of the property has been appraised, and the Government, having paid the company a fair equivalent, it is now in full possession of it. But to discuss a proposition for the relinquishment by the State of New York of all interest and a complete abandonment of jurisdiction and control of the Erie Canal to the Government, without equivalent or compensation, to ask the State to give away a property the value of which to the country can scarcely be estimated in money, for a comparatively small appropriation for improving a great commercial channel which would benefit the whole country, and almost every other State more than the State of New York, assuredly would neither be considered complimentary nor courteous to the proverbial sagacity and commercial reputation of her citizens. I venture to say that a proposition of this character would not be entertained for a moment by the people of the State of New York; but the Empire State would undoubtedly, in consideration of the appropriation of money for the proposed enlargement by the General Government, agree to levy a very moderate toll on the tonnage passing through the canal, sufficient only to maintain the work in good repair and provide a small annual sum for the gradual extinguishment of the present canal debt. Practically this would ensure a free canal without annual appropriations from the Government for maintenance and repairs, and secure in perpetuity what the country so much needs—cheap and reliable transport between the East and the West.

The problem of cheap transportation in a commercial point of view is paramount to all subjects, and seems the most difficult of solution. It has engaged the attention of thinking men for years. It concerns all departments of commerce, the producer and the consumer, the miner and the manufacturer, and, in fact, all the elements which constitute or contribute to the material wealth of the country. It is the key which unlocks the portals of untold wealth, and determines the standard of civilization. All avenues or channels of traffic, natural or artificial, directly affecting the commerce of a large number of States or groups of States, affording cheap and reliable transit free to all, for the products of the country, may with great propriety be considered national in their importance. It would be a work of supererogation to attempt an argument to convince intelligent people that such avenues of commerce should not depend on the liberality, pride, or patriotism of the State which happens to lie in the traffic route, and through which these channels pass, conferring wealth and happi-

ness on millions. They should be considered national in their character, and, as such, the recipients of the nation's fostering care and bounty.

It was evident to the eminent projectors of the Erie Canal that while nature had interposed mountain barriers between the East and the West across all the other States, she had hewn a highway through the Alleghanies, and laid a plateau westward to Lake Erie, for the future commerce of the millions which were to populate and develop the marvelous riches of that vast and then almost unknown territory beyond the inland seas. Although years of disappointment and delay intervened, the efforts of Clinton and his compeers were not slackened until the waters of the Hudson and the lakes were mingled. The little water-way of 40 feet by 4 at once reduced the cost of transportation, from Albany to Buffalo, from $70 per ton to $10. The tide of emigration began to set towards new homes on the rich prairies of the West, dotting that hitherto almost unknown region with enterprising settlers, and imparting a stimulus and intelligence which were destined to verify the prophetic words of Berkeley:

Westward the course of Empire takes its way.

A few years, however, sufficed to prove that the most brilliant anticipations of the friends of the canal fell far short of the reality. "Clinton's Ditch," as it was called, was found to be too small to float the traffic which crowded to its banks.

An enlargement was commened in 1835, and pronounced completed in 1852, but, unfortunately, the locks admit boats of only 225 tons, while the prism of the canal—70 feet by 7—will float a boat of 650 tons. This disproportion necessarily restricts the tonnage and entails a higher cost of transportation than would exist if the locks and prism corresponded in size. The canal has the capacity to float 12,000,000 or more tons to tide water during the season of navigation; but the locks restrict it to about 4,000,000 tons. By enlarging the locks to a size commensurate with the prism, the size of the boats could be increased to 650 tons, and the cost of freight in consequence would be reduced nearly 50 per cent., or 5 cents on a bushel of wheat, and by the introduction of steam the speed would be double that of the present mode of towing by horse-power. Can there be a doubt of the immense national advantage resulting from such an enlargement and cheapening of transportation? The great food-producing States, which forty years since were almost unknown, but which are now the field of vast activities and enterprise, containing a population of more than thirteen millions, are but the gateways to an almost boundless extent of fertile territory, sufficient for a score or more of States, of genial soil and climate, whither the tide of emigration is rapidly flowing, and towns and cities are springing into life like magic, to become the centers of civilization and refinement, and the sources of a more than imperial commerce. From the territories of Montana and Washington, and from Oregon and Western Minnesota, were recently on exhibition in the city of New York positive proofs of the extraordinary fertility of that great interior portion of our country. They consisted of specimens of wheat, barley, rye, oats, vegetables and fruits, which, for quality and quantity of product, cannot be surpassed, and are rarely equaled in any country.

The cereal product of the United States, by official returns, in 1850 was 844,024,316 bushels. In 1860 it was 1,239,039,945 bushels. In 1871 it is estimated to have been nearly 1,600,000,000 bushels, and we may safely estimate the product of 1880 at 2,000,000,000 bushels. Need I speak of the incalculable mineral wealth hidden in the everlasting hills which pour their waters into the Atlantic and Pacific? Truly we have "a land without scarceness," a land of gold and silver, "a land whose stones are iron, and out of whose hills thou mayest dig brass."

Our exports of wheat and corn to the United Kingdom of Great Britain and Ireland, according to a statement compiled by E. H. Walker, esq., the eminent statistician of the New York Produce Exchange, were as follows for the years named:

Years.	Wheat, bushels.	Corn, bushels.
1868	725,720	3,185,036
1869	930,881	14,818
1870	23,167,463	8,931,611
1871	16,959,763	30,225,623

The United Kingdom imported in 1871 from all countries 150,000,000 bushels of cereals, of which the United States furnished 47,185,386 bushels, Russia 43,500,000, and other countries the balance. The total exports of Russia in 1870 were 132,917,000 bushels, while the total exports from the United States for that year were about 40,000,000 bushels.

It is apparent that in competing for the supply of the English markets, we have a powerful antagonist in Russia, a country similar to our own in its topography and

agricultural resources, active in projecting works of internal improvement for the purpose of cheapening the transportation of its cereals to the sea-board, and determined to hold, if possible, her supremacy in the markets of the world for the sale of her agricultural products. The comparative cereal product and ratio to population of the countries of Europe and also that of the United States, for the year 1860, are shown in the able Paris Exposition Report of the Hon. S. B. Ruggles. He states the product of Russia at 1,358,437,500 bushels, being 22.1 bushels ratio to population; Germany, France, Austria, Great Britain and Ireland, 2,298,518,442, being a ratio of 18.2 bushels to their population; Sweden, Norway, Denmark, Holland, Belgium, and Switzerland, 203,723,532 bushels, being a ratio of 12.9 bushels; Portugal, Spain, Italy, Greece, the Danubian Principalities, and Turkey, 606,490,267 bushels, a ratio of 9.6 bushels. The product of the United States, as already shown, for the year 1860, was 1,239,039,945 bushels, being a ratio of 39.4 bushels to the population. This alone shows the product ratio to the population in this country to have been much larger in 1860 than that of Russia, and by the census of 1870 it is still greater. Can there be a better argument for cheap transportation than the fact that the United States is the largest food producing country in the world, with a steadily increasing surplus from year to year? We require and must have transport at greatly reduced cost for our products, or be supplanted by other nations in those markets which now control the price and value of our products. Enlarged and cheap water-carriage is demanded by the country as a necessity in checking and controlling the monopolizing tendency of railroads.

In discussing this subject I do not wish to depreciate in any degree the inestimable value of those great highways of the people's travel and traffic, for it is obvious that they have created vast wealth and are indispensable to the commercial prosperity of the country. There should be no antagonism between railroads and water channels; both are necessary to commerce, and with its increase both will prosper. But a healthy competition is the life of business; and water channels, natural and artificial, are necessary to keep in check those gigantic organizations which are now stretching their iron arms with overshadowing and almost despotic power over the country, and, by consolidation, so vastly increasing in wealth and strength as to control, to a great extent, the commercial values of our products and crush out competition in the carrying trade. I am aware that the rapid increase of railroads have induced many to believe that they would eventually supersede all other modes of conveyance. This opinion is undoubtedly correct in regard to their superiority over canals of small capacity, dependent on local tonnage on short routes; and also for certain classes of freight requiring celerity of movement, railroads will always take precedence, but it is conceded that on large distances for bulky and heavy tonnage water carriage will be found the cheapest.

I quote from the New York State auditor's report for 1872, showing the comparative prices of freight carried by the New York Central Railroad and the Erie Canal per ton per mile:

	Per ton per mile.		Per ton per mile.
	Cents.		*Cents.*
In 1866 the New York Central Railroad received	2.92	In 1870 the New York Central Railroad received	1.86
In 1866 the Erie Canal received	1.00	In 1870 the Erie Canal received	83
In 1868 the New York Central Railroad received	2.59	In 1871 the New York Central Railroad received	1.65
In 1868 the Erie Canal received	88	In 1871 the Erie Canal received	1.02

It is evident from the above statement that the canal carries its freight at less than one-half the price received by a parallel railroad.

It may also be of interest to quote from the same report a comparative statement of the amount of tonnage arriving at tide-water by the Erie Canal during the years named, distinguishing the tonnage of the State of New York from that of the Western States:

Year.	Western.	New York State.	Year.	Western.	New York State.
	Tons.	*Tons.*		*Tons.*	*Tons.*
1837	56,355	321,251	1857	918,998	197,201
1842	221,477	258,672	1862	2,594,837	322,257
1847	912,840	618,412	1867	2,129,405	96,707
1852	1,151,978	492,721	1870	2,048,947	241,751

By the above table it will be seen that the New York State tonnage in 1837 was five times greater than that from the Western States. In 1857 the Western tonnage was more than four times as much as the local, and in 1870 the Western was nearly 90 per cent. of the total tonnage.

On facts like these the Erie Canal has fully established its national character. It is the medium of transport, not for the trifling product of a single State, but for the accumulated agricultural, manufacturing, and mining products of a large number of States and Territories, in their intercourse with each other and with foreign nations. The enlargement of this water highway would prove an inestimable boon to every town and hamlet in New England in cheapening the staff of life, and to the West an incalculable blessing by increasing the value of the products of the soil. Corn would assert its superiority over fuel, and the producer would not be compelled to give four bushels to transport one to tide-water, as the high rate of freights now compels him to do. The State of New York heretofore maintained the high-toll policy on her canal for the purpose of relieving the people of the burden of a heavy debt (now about $10,000,000) which her canal system has created; but wiser and more statesmanlike views now prevail, and the low-toll system is not only increasing the tonnage, but it is hoped that the revenue will make an improved exhibit at the end of the year. With the proposed enlargement, adapted to boats of 650 tons, under a low-toll policy, the tonnage of the canal would at once be largely increased, and the saving in expense of transportation would soon cover the cost of enlargement.

The receipts for the year 1871, at the five principal lake ports, viz, Chicago, Milwaukee, Toledo, Detroit, and Cleveland, were 122,075,432 bushels. A saving of 5 cents per bushel on this quantity would amount to over $6,000,000. It is not on grain alone that a saving would be made, but all classes of merchandise would be benefited directly or indirectly by the influence of the canal. Assuming that the canal governs the price of transportation during the season of navigation, of which fact there can be no question, can there be a doubt of the salutary effect of such an improvement upon the country in enabling it to compete successfully for the sale of its surplus products in foreign markets? Can there be a more magnificent undertaking for a great Government than to contribute generously to make a free highway for the products of a people who have derived the title-deeds of their homes at its hands, and who have done such great service in establishing the Government on a firm foundation?

This improvement would largely extend the area of production, increase the commerce upon our lakes and rivers, and encourage the restoration of our national marine and prestige in the foreign trade. The ports of the Saint Lawrence have already attained to a successful competition with our own in the exportation of American products, and the Dominion Government, with most commendable statesmanship, has taken decided measures for enlarging her canals, and also for the construction of new and shorter works for cheapening the cost of transportation of products from our Northwestern States. The laws of commerce are so arbitrary and regardless of social and national ties, that traffic will always find the cheapest and most expeditious channels, and it may result, if we rest too long in our fancied security, that the improvements contemplated by our Canadian neighbors may deprive us of the supremacy we now enjoy in our legitimate commerce.

The subject of the Erie Canal and cheap transportation, in connection with the foregoing pamphlet, was thus alluded to by the Buffalo Commercial Advertiser of December 6, 1872:

[From the Buffalo Commercial Advertiser, December 6, 1872.]

THE ERIE CANAL AND CHEAP TRANSPORTATION.

The President's forcible recommendation that Congress should take into consideration the question of whether some means can or cannot be devised for cheapening transportation, affords ground for hope that the subject is at length to receive that general attention which its importance demands. After mentioning several projects, with this end in view, which had presented themselves to his notice, the President wisely refrained from recommending any action with regard to either of them, and contented himself with suggesting the advisability of taking the proper steps to procure and place before Congress in an authentic form all the necessary information to enable it hereafter, if deemed practicable and worthy, to legislate onthe subject without delay. Among the projects mentioned in the message a conspicuous position was given to the Niagara Ship Canal. The project for enlarging and nationalizing the Erie Canal was made conspicuous by its absence from the President's list of contemtemplated internal improvements.

Now, we like the President's suggestion. It would be a good thing for Congress to procure authentic, impartial information, and competent scientific opinions, with re-

gard to the feasibility and expense of these great internal improvements. Without regard to the question whether it is good or bad policy for the General Government to take hold of such works, or for any political party to identify itself with such a policy, we conceive that nothing but good could come of an intelligent effort to give the public all possible light on this subject, and we have no doubt that the people would cheerfully foot the bills that might be incurred by Congress in pursuance of the President's suggestions. By all means let us have a thoroughly impartial and thoroughly qualified commission to investigate and report upon this subject. Every scheme of internal improvement naturally has its own particular advocates, and each one is likely to be presented in a too favorable light by its friends, and perhaps in a too unfavorable light by its enemies and the friends of some rival project. What the people want is the truth about all these contemplated internal improvements before it is decided to grant or refuse national aid to either of them.

We hope, therefore, that the present session, the last of the Forty-second Congress, may witness the adoption of some measure in accordance with this pertinent suggestion from the White House. And we should be glad, also, to see our retiring member distinguish himself by seeing to it that the project for enlarging and nationalizing the Erie Canal is incorporated in such a bill as one of the subjects to be investigated. As to the necessity for this improvement, and the great good that could not fail to result from it to the whole people, we cannot do better than to invite the attention of Congress, and of all interested in the subject, to the able paper on the first page of to-day's Commercial, from the pen of Mr. George S. Hazard, of this city. Whenever we shall see so much of good argument, and so many convincing statistics presented in favor of constructing the Niagara Ship Canal, or any other work of internal improvement having in view the cheapening of transportation by a grant from the General Government, as Mr. Hazard has clearly set forth in behalf of the New York water route, we shall be very happy to give such a paper to our readers, and to the scheme such poor support as our best efforts will supply.

The President well says that, "looking to the great future growth of the country and the increasing demands of commerce," it is advisable for Congress to procure an examination and report on "the various practicable routes for connecting the Mississippi with tide-water on the Atlantic." The Niagara Ship Canal would form a short portion of one such route; the Erie Canal forms a long portion of another. The construction of the former would not complete that route. Great and expensive works would be needed east of Oswego to enable its commerce to reach tide-water on the Atlantic coast, *in the United States*, and we presume that Congress will not be asked for aid to turn our commerce down the Saint Lawrence through Canada. The only work needed to complete such a water route as the President describes, to connect the Mississippi with the Atlantic, for sea-going vessels, would be an enlargement of the Erie Canal and the completion of the Fox River improvement, which is already owned by the Government. The latter work is also needed to complete the Niagara Ship Canal route. Between the feasibility of these two projects, and which should be preferred, let Congress take measures that will enable it to judge.

The following is the "Wemple bill," introduced into the House of Representatives January 16, 1884, and referred to Committee on Railways and Canals. On March 4 reported with amendments, committed to the Committee of the Whole House on the state of the Union, and ordered to be printed.

A BILL for the permanent improvement of the Erie Canal, and to aid in maintaining the same free to the commerce of the United States.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Treasury be, and he hereby is, authorized and directed to pay into the treasury of the State of New York the sum of one million of dollars annually for the purpose of making improvements to the Erie Canal in the way of deepening and enlarging the canal and constructing and repairing walls, locks, and appurtenances of a fixed and permanent character.

SEC. 2. That said sum of one million dollars shall be paid annually, commencing on the first day of September, eighteen hundred and eighty-four, and on the first day of September in each and every year thereafter, for the period of ten years: *Provided*, That the said canal shall be maintained by said State of New York free to the commerce of the United States; and said sum herein named shall be paid out, when received by the treasurer of said State, on the requisition of the superintendent of public works of said State, to be by him expended on works and improvements to said canal of a permanent character only: *Provided further*, That the State of New York shall maintain the said canal in its current ordinary expenses of repairs and operating the same except as hereinbefore provided.

Amend the title so as to read: "A bill for the permanent improvement of the Erie Canal, and to aid in maintaining the same free to the commerce of the United States."

The following report was submitted in connection with the foregoing:

[House report No. 628, Forty-eighth Congress, first session.]

The Committee on Railways and Canals, to whom was referred the bill (H. R. 3538) to provide for the permanent improvement of the Erie Canal, and to aid in maintaining the same free to the commerce of the United States, beg leave to submit the following report:

The Erie Canal is, as is well-known, located in the State of New York, running through the valley of the Mohawk and connecting with the head of the navigable waters of the Hudson River, and through these valleys, which is the only break through the mountain ranges, from Georgia to the Saint Lawrence, intervening between the Atlantic and the Western prairies.

This is the only natural outlet for the great grain-fields of the West to the eastern sea-board, and nowhere else can an avenue of commerce be constructed or maintained, on account of the topographical and geographical conditions of the country, with equal facilities. This canal is of some 350 miles in length, of nearly a uniform width of 70 feet or over at the water surface, and there is maintained at all times a depth of 7 feet of water, floating boats of 260 tons burden. This important water route has cost the people of the State of New York the sum of $60,000,000 for its construction and enlargement, and during the past year the people of that State burdened themselves with a tax of over $500,000 for the necessary maintenance of this canal, and made it free to the commerce of the world.

It is ascertained that in the expenses attendant upon the maintenance of the Erie Canal that there are two funds—one for extraordinary repairs, designed to be for the improvement and maintenance of the permanent structures; the other for ordinary repairs, such as are incident to the ordinary running expenses of the canal.

The people of that great commonwealth have made this canal entirely free to the commerce of the world, and it is the design of this bill that by the appropriation of the amount named the people of New York State may be relieved of the cost of the extraordinary repairs, and to aid in its needed improvement and enlargement by appropriating for that purpose the sum of $1,000,000 per annum for the period of ten years, or only so long as the said canal is maintained free to commerce; and this is deemed but just when it is ascertained that the total amount of tonnage (in bushels) of flour, corn-meal, wheat, corn, oats, barley, peas and malt which arrived in New York from the 1st day of January, 1883, to the 31st day of December, 1883, was 124,336,237 bushels, and was delivered at that port by the following routes:

	Bushels.
New York Central and Hudson River Railroad	32,125,615
New York, Lake Erie and Western Railroad	28,765,288
Pennsylvania Central Railroad	13,060,494
Delaware, Lackawanna and Western Railroad	4,581,770
Various routes	856,924
By river and coast	3,725,238
By canal (seven months)	41,220,908
	124,336,237

Of the entire amount of grain thus received at the port of New York during the year it will be observed that—

	Per cent.
The New York Central Railroad carried	25.84
The Erie Railway carried	23.13
The Pennsylvania Central Railroad carried	10.50
The Delaware, Lackawanna and Western Railroad carried	3.69
Various small routes carried	0.69
River and coast	3
The Erie Canal in seven months carried	33.15

The following statement will show the total quantity in tons (of 2,000 pounds) of property which was delivered by canal at the city of New York during the season of 1883:

	Tons.
Lumber	555,540
Wheat	493,218
Rye	93,019
Corn	464,509
Barley	44,151
Barley malt	14,414

	Tons.
.....	48,744
.....	37,851
.....	19,411
and cake	3,810
d bar iron	2,538
salt	25,094
steel	1,132
iron	3,247
merchandise	18,653
ne, and clay	50,732
us coal	14,361
.....	213,966
.....	27,232
	2,815,987

lue of all the articles that went to New York by the canal during the year $57,231,806, and was composed of the following:

.....	$7,874,350
ached	30,826
low, and lard oil	102,000
.....	10,875
.....	18,906,707
.....	2,491,581
.....	11,612,716
.....	1,545,285
alt	813,026
.....	1,370,913
.....	504,716
l	1,164,678
and cake	228,601
.....	107,501
d bar iron	126,414
salt	150,565
steel	135,893
iron	162,360
erchandise	6,715,151
me, and clay	507,169
us coal	86,183
.....	855,866
.....	1,412,256
tal value	57,231,806

WEST-BOUND FREIGHT.

tal value of all the west-bound freight left at Buffalo from the Erie Canal e *season was* $20,557,074.

llowing-described property was left at Buffalo from the Erie Canal during the f 1883, and came direct to that point by the Erie Canal from the Hudson

	Tons.
nd scantling	141
.....	2,903
.....	26
.....	115
.....	28,525
nd bar iron	5,440
and iron ware	220
salt	19,291
.....	4,003
.....	5,777
ikes, and horseshoes	210
steel	35,307
iron	29,046
amel, crockery, and glassware	344
r merchandise	111,683
me, and clay	14,198
te	9,848

	Tons.
Anthracite coal	136,931
Iron ore	602
Sundries	26,996
Dried fruit	2,361
Bar and pig lead	23
Coffee	712
Total	424,507

CHEAP TRANSPORTATION.

This is a very great and one of the problematic questions of the day: upon its solution depends the welfare of so many of the citizens of our Republic. On the economical solution of this problem depends to a very great extent our commercial supremacy. New York possesses the key to the situation in the Erie Canal. The cheapest mode of transportation is by the Erie Canal, which extends from the lakes to the Hudson River, a distance of 350 miles, and 500 miles from New York City. Taking the average price paid for the transportation of wheat during the season, which was about 5 cents per bushel, or 8⅓ cents per 100 pounds, from Buffalo to New York, being 1.67 cents per ton for 500 miles, which is equal to .0334 cents per ton per mile, or to carrying one ton 3 miles for 1 cent for eastward-bound freights.

During the summer the average price paid for carrying merchandise from New York to Buffalo, distance 500 miles, has been 75 cents per ton, which is equal to carrying 1 ton 6⅔ miles for 1 cent.

Yet it is surprising that so much has gone by the way of the canal when it is known that whatever comes to it does solely of its own accord and unsolicited, while the railways, through their agents scattered throughout the country, are constantly seeking business for their various lines, yet, notwithstanding this it has carried over one-third of the cereals coming to the sea-board at New York.

The construction of artificial roads and canals is the great instrument in developing the wealth and energies of the nation.

The Erie Canal has done more to advance the population, wealth, and enterprise of the Western States than all the other causes combined; nor can it be doubted that it has been the efficient cause of increasing the value of the public lands, and of contributing to the rapidity of their sales. The vast grain and produce growing regions of the West are directly interested in the development, improvement, and maintenance of this great waterway; and now, with the many improvements in railroading, so very greatly increasing their facilities and capacities, it is of the supremest importance for the people to sustain this great regulator of freight charges.

New York has done nobly in constructing her works of internal improvement. Her canals reflect great honor upon her people and upon the whole country, while they have been to the great West and the country at large as much or more of a benefit than to herself.

Her entire system of canals have cost her an enormous sum of money, much more than she ever received in return. Then she abandoned the lateral and non-paying canals.

The Erie Canal has been the source of a great revenue to the people of New York, when from 1862 to 1869, the period of her highest rates, after the constitutional amendment of 1854, when the toll on wheat from Buffalo to tide-water was nearly 6¼ cents per bushel. And still the Erie Canal paid the people from 1870 to 1874, when the tolls were reduced one-half; but the tolls were continually being reduced, so that from 1877 to 1882 they were but 1 cent per bushel; and now the people of that great commonwealth, in their liberal, broad-minded, and catholic spirit, have removed the tolls entirely and have made this canal free to the commerce of the world.

THE ERIE CANAL IS THE GREAT REGULATOR.

The cost of water transportation from Chicago to New York determines the rate of rail transportation, and the rate of rail transportation from Chicago to New York is the base line upon which railroad rates are determined and fixed throughout the country. We know the Erie Canal to be the great regulator of freights going to and from the sea-board.

Senator Windom, as chairman of the Select Committee on Transportation Routes to the Sea-board, in his very able report to the United States Senate in 1873, and again later in a masterly speech in the United States Senate in 1878, on the same subject, says:

"The chief instrumentalities by means of which those (competitive) forces will exert their power are the Mississippi River on the one side and the northern water routes *on the* other. * * * Both routes constitute indispensable parts of one grand sys-

* * Each is needed to regulate the other and both as regulators of railway
Each has some advantages which the other lacks, and some impediment
e other has not; but on the whole their trade forces, commercial facilities,
omic capacity for cheap transportation will be so evenly balanced as to in-
althy, active, and permanent competition.
ll be as impossible for them [the railroads] to combine to put up prices as to
ombination of interests between Chicago and Saint Louis or New York and
ans. The interests of the lines themselves are necessarily antagonistic, and
rill be an open, free highway to everybody who chooses to float a vessel upon
s, combination will be simply impossible and competition the inevitable law
existence. * * * But the competitive power and influence of the two
testants (the water and railroad lines) will not be limited to any one locality,
extend to nearly every State in the Union, and will hold in check and regu-
harges on every railroad from the interior to the sea-board. The wide sweep
titive influence exerted by the Erie Canal is not generally understood or ap-
l. You would doubtless be surprised, Mr. President, if I told you that the
tch" which runs through your State holds in check and regulates nearly every
ailroad east of the Mississippi River, and that it exerts a marked influence
st of transportation over all the country extending from the interior of the
tes to the Saint Lawrence River, and from the great plains of the eastern
of the Rocky Mountains to the Atlantic Ocean. And yet such is the fact.
it may be thought that my enthusiasm on this subject has betrayed me into
eration, I will give you the words of Mr. Albert Fink, a gentleman who has
lice in favor of water transportation, but whose ability and experience as a
manager is recognized everywhere. Mr. Fink has given more attention to
sophy of transportation and written more wisely in regard to it than any
n in the United States. * * * I quote:

OFFICE OF COMMISSIONER, No. 346 BROADWAY,
New York, May 3, 1878.

SIR: In your letter of April 29, you ask me to explain the effect of the open-
vigation on the lakes upon rates of transportation charged by the railroads
g from the West to the interior Gulf States. You are aware that when the
reduced between Chicago and New York on account of the opening of the
t this reduction applies not only from Chicago, but from all interior cities
uis, Indianapolis, Cincinnati) to New York. If that were not the rule the
uld be that the roads—running, say from Saint Louis, Indianapolis, and Cin-
o Chicago would carry the freight to Chicago, from which point low rail or
tes would take it to the East and leave the direct railroad routes from these
points to the sea-board without any business. Hence, whenever the rates
ced on account of the opening of navigation from Chicago and the lake ports,
reduction is made from all interior cities, not only to New York, where the
ns, but also to Boston, Philadelphia, and Baltimore. Although the latter
ve no direct water communication with the West, yet they receive the benefit,
low railroad rates are concerned, to the same extent as if a canal was actu-
ing from the lakes direct to those cities, because whenever rates from Chicago
York are reduced, it becomes absolutely necessary to reduce correspondingly
from Chicago to Boston, Philadelphia, and Baltimore, otherwisethese cities
no business, as it would all go to New York.
duction of the rates from Chicago and Saint Louis to New York, Baltimore,
ices the rates on shipments from western points via New York, Baltimore, and
the Southern Atlantic ports, to Norfolk, Wilmington, Port Royal, Savannah,
ck, Fernandina, &c., and from there into the interior Atlantic Gulf States by
ater routes to Augusta, Atlanta, Macon, Montgomery, Selma, Houston, &c.
oads running direct from Chicago and Saint Louis, via Louisville, Nashville,
tanooga to the same points are obliged to follow the reductions made via the
ocean routes, and which reductions were primarily made on account of the
of the Erie Canal and the opening of navigation; it follows, therefore, that
Canal influences the rates of transportation from Chicago, Saint Louis, Cin-
&c., to the interior of the Gulf States.
me is true in relation to the west-bound freight. When rates are reduced
w York to Chicago the roads from New York to Louisville reduce their rates
ients made by way of Louisville to Memphis, Nashville, Montgomery, Selma,
the direct Southern transportation lines from New York via Norfolk, Wil-
Charleston, Savannah, &c., have to reduce their rates to meet those made
orthern lines to the same points, and vice versa.
ears from the above statement that the Erie Canal and the lakes exercise their
over the Southern country until it reaches a line where low ocean rates
w York to the Gulf cities—Mobile, New Orleans, and Galveston—exercise
uence upon the rates to the adjacent interior points to Augusta, Macon, Sel-

ma, Montgomery, Houston, &c., so that it may be said that all the rail rates are kept in check by water transportation.

There need be no fear that extortionate rates will be charged by railroad companies; on the contrary, the fear is that water competition will be so effective as to prevent railroads from securing paying rates.

Very truly, yours,

ALBERT FINK.

Hon. WILLIAM WINDOM,
Washington, D. C.

"Mr. President, this sketch of the territorial extent of the influence exerted by the Erie Canal is drawn, not by an enthusiastic advocate of water transportation, but by a cool-headed, practical railroad manager of great ability and large experience, who has long been accustomed to watch the performances of water-ways from the railroad standpoint and to measure their power with reference to its effect on railway rates."

It is an utter impossibility to ever get this great factor into the "pool system," as the canal itself is owned by the State, and that has ever manifested its willingness to aid in reducing the cost of carriage; besides there are some 5,000 boats that traverse this canal with nearly as many separate owners, so there is not the least possibility of a combination. So it is apparent that any improvements made for reducing the cost of transportation on the Erie Canal of necessity reduces the carriage upon all other lines, and this important and permanent result cannot be obtained upon any other line to the sea-board.

Governor Seymour very truthfully says:

"But it may be said that the Erie Canal has lost much of its importance by the increase of railroads. This is a mistaken idea; it grows in value as railroads multiply. It is true they have drawn from it much of its tonnage, but what would their charges have been for carrying had there been no canals? What would they be if they are destroyed?"

The Erie Canal is the only hope of the people against the combined influence, power, and capital of the aggregate railway interest of this country.

It is in direct competition with the greatly enlarged and improved canal of the Canadian Government.

The amount of freight transported on this canal is carefully kept from public view by the Canadian authorities until the reports are made to the Dominion Parliament, and subsequently published. It is therefore impossible to get the movement on this canal for the past year. The British Government has expended $20,000,000 in the improvement of this water-way, and it bids fair to become the most formidable rival of the Erie Canal. During the three months ending June 30, 1883, the total amount of freight transported by the Welland Canal was 268,381 tons, and the total tolls received from all sources, vessels, passengers, and freight was $48,615.57.

During the fiscal year ending June 30, 1883, the total tons transported on the Welland Canal was 861,634 tons, of which 746,162 tons was through freight, having been transported the entire length of the canal.

New York has done much and is doing much for the benefit and interest of our great Republic. Are we not asking too much when we tax the farmer of that State to be burdened for the benefit of the farmer of the great West?

The Erie Canal directly benefits more than 20,000,000 of our people in receiving and transporting the produce, merchandise, &c., from twelve of the Western and Southwestern States, all of which passed over its waters for eastern and foreign markets at less price than railroads would contract to carry for. In like manner they received to the extent of some 179,505 tons of the manufactures of the East in the form of agricultural implements and the like, which passed entirely beyond the limit of the Empire State, and solely for the benefit of the Western producer in giving him the lowest freight rates on these articles.

There was left at Buffalo during the season for Western States—

	Tons.
Sugar	3,779
Molasses	5,421
Coffee	672
Nails and spikes (iron and steel)	33,451
Railroad iron	28,581
Crockery	265
Merchandise	107,336
Total tons	179,505

By this proposition the people of New York are not to be relieved entirely from the support of the canal. They have received great benefits from it, and its citizens are

ready and willing to contribute liberally to its support, and by the provisions of this bill they are not to receive any aid from the Government only so long as they keep and maintain the Erie Canal free to commerce; but for the

IMPROVEMENT OF THE ERIE,

in deepening, widening, and enlarging this canal and its permanent and large structures, it is asked that Government aid be given so as to benefit and improve this great water-way. Its benefits lie beyond the limits of that State now, and while the people of the State of New York support this canal at a large annual expense, it is but just and equitable that the General Government give aid to its improvement, which it greatly stands in need of, and aid to increase its capacity.

This canal has demonstrated that the greater the facilities for transportation the less will be the cost for transportation. And notwithstanding the many additional miles of new railroads, built within the past few years, the means of transportation have not kept pace with the increased production or population.

REPORT OF ENGINEERS.

For the enlargement and improvement of her canals by the United States Government the State of New York has already given her consent by the enactment of chapter 415, Laws of 1862, wherein the General Government was given permission to alter, enlarge, and deepen the Erie Canal, or its structures, and also to lengthen its locks.

Again, in 1863, by a joint resolution reciting the augmentation to national commerce by the deepening of this canal and the lengthening of its locks, the governor was directed to invite the President of the United States to select and detail a competent engineer, in behalf of the General Government, to consult with engineers to be appointed by the State in respect to the surveys to be made for that purpose. Hon. Charles B. Stuart was appointed as such by the President of the United States, and Hon. William B. Taylor, then State engineer, on behalf of the State, who directed the surveys and estimates to be made. In their report they say:

"By the enlargement of the Erie Canal, as authorized by the legislature of the State of New York in 1837, so as to be navigable for boats of 240 tons, instead of 80 tons as then in use, it was proven that the cost of transportation by means of this enlarged canal was reduced 50 per cent."

And they find further that—

"By the deepening of this enlarged trunk of the Erie Canal as now existing, and by the lengthening of the locks, a saving of nearly the same amount may be obtained."

By the lengthening of the locks, so as to take in two boats at a time, as they are now so very generally run together as consorts, and with improved lock-gates, the saving in time of a passage from Buffalo to Albany over the whole length of this canal would be very material.

These improvements, together with the deepening of the canal 1 foot so as to enlarge its capacity, the saving in the cost of carriage would no doubt be fully the 50 per cent. Therefore we have now State application for these improvements which would so materially augment our national commerce, both foreign and domestic, and the President, in calling the attention of Congress in his message of December, 1872, to this subject, the co-operation of the Senate in appointing a committee to examine and investigate the subject of cheap transportation between the interior and the seaboard, and the careful, thorough, and elaborate examination of the committee, have invested this matter with a national indorsement.

There are numerous precedents where aid has been given by the General Government to both canals and railways by the appropriation of either lands or moneys, a few of which instances are cited as follows:

Date.	Stat. at Large.		To whom aid extended.	Nature of aid.
	Vol.	Page.		
May 18, 1826	4	169	To Dismal Swamp Canal Company	$150,000
Mar. 21, 1827	4	236	Indiana, for canal purposes	Land.
May 24, 1828	4	305	To Ohio, to extend Miami Canal	Land.
Mar. 2, 1829	4	353	To La. and Portland Canal Company	Stock.
Mar. 2, 1831	4	474	To Florida, for canal purposes	Land.
Aug. 26, 1842	10	35–36	To Michigan, for canal purposes	Land.

And to railroads, other than the Pacifics, the cases are almost innumerable, as there is hardly a railroad of importance in the West but that has received aid from the General Government, and some to the extent of many millions of dollars.

In conclusion we say that, considered in its commercial aspect, the Erie Canal is now in every respect national in its character, aiding the citizens of this whole General Government, even those located at its furthest border, and so deserving of aid, and we therefore recommend the passage of the bill with amendments.

THE CANALS OF THE STATE—SUPPLEMENTARY REPORT, AUGUST, 1884.

Since my report of June, 1883, I have found several interesting facts, which are here presented. This supplementary report, added to the original, will be a record containing all the principal points of an historic character relative to the canals of the State of New York. From documents published this year I have been enabled to present statistics to the close of 1883, thus bringing the said record down to date.

WM. THURSTONE.

In 1792 an act passed the legislature of the State of New York incorporating two companies, viz:

(1) The Western Inland Lock Navigation Company, charged with constructing a canal with locks between the upper waters of the Mohawk and those flowing into Lake Ontario.

(2) The Northern Inland Lock Navigation Company, charged with constructing a canal with locks from the Hudson to Lake Champlain.

(At that time the practicability of a canal from the Hudson River to Lake Erie was never dreamed of.)

The works of the Western Inland Lock Navigation Company were only partially completed when the projectors became disheartened and sold all their works to the State for $140,000, one-quarter of the original cost, and of this sum the State contributed $92,000 as the stockholder of 350 shares.

In 1807 Mr. Jesse Hawley urged the construction of a canal from Lake Erie, 100 feet wide and 10 feet deep, "to be laid on an *inclined plane*" from Buffalo to Utica, thence down the channel of the Mohawk, and from thence across a portage to Albany; the work to be done at the expense of the National Government.

In 1808 the State legislature appropriated $600 to make a survey, and Mr. Geddes was appointed to do the work. In 1809 Mr. Geddes reported that "a canal from Lake Erie to the Hudson River was not only practicable, but practicable with uncommon facility."

In 1810, by resolution of the State legislature, $3,000 was appropriated for expenses and a commission appointed to explore the whole route of inland navigation from the Hudson to Lake Ontario and Lake Erie. The commissioners were Gouverneur Morris, Stephen Van Rensselaer, De Witt Clinton, Samuel De Witt, William North, Thomas Eddy, and Peter B. Porter. In 1811 the commissioners reported and advocated a canal on Mr. Geddes's route, the work to be done by, and at the expense of the State of New York. All idea of carrying out the work was suspended during the war of 1813–'14.

In 1815 peace came. In 1816 the subject was again considered and the legislature appropriated $20,000 to complete the surveys. Three engineers were also appointed. In February, 1817, the commissioners established the dimensions of the canal and length. It was to cost $5,752,738; $871,000 for the Champlain division and $4,881,73 for the Erie division.

According to the best information to be obtained the cost at this time of transporting a ton of merchandise from Buffalo to Montreal was $30, and the cost from Montreal to Buffalo was from $60 to $75. The expense of bringing a ton of merchandise from New York City to Buffalo was estimated at $100. The commissioners said that if the merchandise was carried by canal the charge would be reduced to $10 or $1 per ton.

In the Census Report of 1880 the following historical and statistical statements were published relative to the inception, construction, and completion of the canals now in operation through the State of New York:

ERIE CANAL.—The attention of the citizens of New York, from the earliest period of its settlement, appears to have been directed to the project of uniting the Hudson with the Western lakes by an "artificial river." The provincial legislature as early as 1768 had its attention called to the subject by Sir Henry Moore, the then governor of the province, and from this period it formed a prominent theme for its deliberations. The political state of the times preceding the revolutionary struggle, and the ensuing conflict, for a time arrested further proceedings relating to this great enterprise, but after the war efforts were renewed for its accomplishment. Although the project has

n frequently brought before the State legislature no legal steps were taken to se e its execution until 1808, when the assembly appointed a committee to investi .e the subject, and, if found practicable, to solicit the co-operation of the General vernment in its accomplishment. The result of this investigation was highly favor le, and established, beyond doubt, the entire feasibility of the proposed measure, ough nothing further was done at that time. Notwithstanding the failure on the art of the legislature to act promptly on the report of its committee it had the effect ' arousing the citizens generally to an appreciation of its importance, and its advo ates augmented in numbers and influence.

In 1810 the legislature appointed commissioners to examine and survey the entire oute from the Hudson River to Lake Erie. This examination resulted in a recommendation on the part of the commissioners that immediate efforts be made to induce the General Government to adopt and execute the proposed connection; but this proposition, as well as subsequent applications to the various State governments for aid, proving fruitless, the State was thrown upon her own resources. The war of 1812 led to the dissolution of the board of canal commissioners and the consequent suspension of all proceedings with regard to the object of its appointment. Soon after the cessation of hostilities, in 1815, the subject of internal improvement was revived and zealously pressed upon public attention; meetings were held in the city of New York and elsewhere which resulted in memorializing the legislature in favor of the proposed improvements, and in 1816 a board of commissioners was again appointed with powers similar to those exercised by the board of 1812. The new board displayed such energy and promptitude in the performance of its duties that the legislature was enabled to act definitely, and on the 15th of April, 1817, was passed the law upon which the system of internal improvement in New York is based. Contracts were immediately entered into, and on the 4th of July, 1817, the excavation of the Erie Canal was commenced in the neighborhood of Rome. The whole line was divided into three sections; the western, extending from Lake Erie to Seneca River; the middle, from Seneca River to Utica; and the eastern, from Utica to the Hudson. The middle section, including a branch from Syracuse to Onondaga Lake, was rendered navigable in October, 1819.

In 1819 and 1820 43 miles on the western section, chiefly on the east of the Genesee River, and in 1820 26 miles on the eastern section were put under contract. Operations were conducted on both sections simultaneously. In the early part of 1821 the residue of the eastern and that part of the western below the Genesee and Tonawanda Creek were let, and in November of the same year boats descended as far as Little Falls, on the Mohawk River. Toward the close of 1822 boats navigated 220 miles of the canal, and in October, 1823, 280 miles were finished, and boats from the north and west entered the Hudson at Albany. On the 26th of October, 1825, the first boat passed from Lake Erie to the Hudson. The period between the commencement and the completion of this canal was eight years three and a half months. The union of the waters was appropriately celebrated in the city of New York on the 4th of November, 1825.

As early as 1834 the rapid increase of the trade of the lakes and canals made it apparent that the capacity of the Erie Canal was no longer adequate to the exigency of the business on it, and on the 29th of January, 1834, the canal commissioners made a special communication to the assembly in favor of doubling the locks east of Syracuse and rebuilding the aqueduct at Rochester. In view of these demands an act was passed the same year authorizing the canal commissioners to construct a second set of lift-locks of such dimensions as they should deem proper on the Erie Canal from Albany to Syracuse, but at the session of 1835 the act of 1834 was repealed and another act passed for enlarging the Erie Canal in its whole extent, and for reconstructing the aqueduct with a 40-foot water-way.

In July, 1835, the canal board resolved "that the canal be enlarged to give 6 feet depth and 60 feet width of water on the surface, and that the locks be 105 feet long and 15 feet wide in the clear." The following October they voted to increase the depth to 7 feet, its width to 70 feet, and the locks to 18 by 110 feet. Work was begun in August, 1836, but little was done, however, until 1837, when $636,312 was expended.

For the five years following, about $2,000,000 were expended annually, and in 1842, by act of the legislature, the work was suspended. In 1847 work was resumed, and it was completed in September, 1862. The total length of the canal was shortened 12.50 miles, making it 365.48 miles in length, and the total feet of lockage was reduced from 675.50 to 656.46 feet. Instead of eighty-three locks 90 by 15, there were seventy-two locks 110 by 18. The size of the prism is 70 and 52½ by 7 feet. This allows the passage of boats 98 by 17½ by 6½ feet, or 225 tons, as against the smaller craft measuring 78½ by 14½ by 3½ feet, or 75 tons.

The supply of water for about 155 miles from Buffalo to the Seneca River is almost entirely from Lake Erie. From that point eastward it is supplied from streams, lakes and reservoirs, as far as Little Falls, whence it is supplied by the Mohawk River alone.

The section from Rochester west is much larger than the rest of the canal. The size of the prism at Rochester is 71 feet surface, 53 feet bottom, and 7.83 feet in depth, and it regularly increases to the size of the prism at Lockport, which is 98 feet on surface, 79 feet on bottom, and 8 feet in depth. From Lockport west the depth is from 9 to 9½ feet.

In view of the fact that the enlarged Welland and Saint Lawrence Canals are diverting the grain shipments to Montreal, and the Canadians now have the advantage in this traffic, the most practicable suggestions to meet this emergency are made by Hon. Horatio Seymour, jr., State engineer and surveyor, who suggests that the canal bank be raised to secure 1 foot more of water, he says:

"If 1 foot of water is added to the depth of the canal by raising its banks the present boats can carry 50 tons additional load, and the relation between the size of the boat and the size of the canal will not be disturbed. The increase in depth would enable the boats to carry one-fifth more cargo. At the present rate of carrying, it would cheapen transportation 1 cent a bushel, which would be equivalent to removing tolls. This plan of deepening the canal recommends itself to the boatmen because it requires no outlay on their part, the boats now in use having a capacity for 50 tons more than the present depth allows them to carry. If no additional load were carried, this increase of depth, with the aplication of power to the locks for operating the gates and drawing the boats in and out, such as is used in New Jersey, on the Delaware and Raritan Canal, would enable boats to make thirty-seven hours better time in a round trip from Buffalo to New York. This gain in many instances would allow boatmen to make another trip a season.

"There is no sentiment in trade. Business goes where it can be done the cheapest, and the route that can carry for a few mills less per bushel than another will command it. The average freight (not including tolls) on a bushel of wheat from Buffalo to New York during the past season has been 5½ cents. If this charge could be reduced to 4½ cents the Erie Canal could offer such economical transportation that there would be very little danger from its northern rival."

He adds: "I have had careful surveys made for the raising of the banks of the canal 1 foot, and for furnishing the necessary water; these show that the work can be done for about $1,000,000. The gain that this improvement would have made in transportation during the past season would be equal to the cost of the work.

"The policy of the State of New York toward the canal is in process of modification. Old and useless branches have been abandoned, and tolls have been reduced from time to time, always with the effect of lessening the cost of transportation. This rate has been gradually diminished until it was fixed at 1 cent per bushel, and was finally removed altogether.

"The liberal policy as carried on within the past four years has produced the following results as to tolls and tonnage:

	1877.	1878.	1879.	1880.
Tolls	$880,896	$993,348	$941,574	$1,155,257
Tonnage	4,955,963	5,171,320	5,262,373	6,462,299

"The number of canal-boats has largely increased, and something like a score of the largest lake vessels, too large for the new Welland, have been built to connect with the Erie and the railroads at Buffalo. This prosperous state of affairs must continue under the new order abolishing the tolls on freight. The entire abolition of tolls, it is claimed, will give still further inducements to the canal men to enlarge their business, which, in these days of monopolies, has the rare merit of being open and free to all."

The cost of all the canals to the State is placed at $61,890,206. According to the Auditor's report for 1880 the funded debt for all of the canals of New York State was $8,981,700, and the floating debt amounted to $6,660. In 1882 the State constitution was amended, abolishing tolls on the canals of the State.

The number of boats employed on the canals was 4,349, with an average tonnage of 172 tons, the maximum tonnage being 250 tons. There were also 70 steamers, averaging 140 tons.

CHAMPLAIN CANAL.—This canal is next in importance to the Erie Canal, and extends from Whitehall, at the head of Lake Champlain, to its junction with the Erie Canal, at Waterford, 7 miles from Albany, completing the waterway between the Atlantic seaboard and the navigable Saint Lawrence. Its construction was authorized in 1817 and the canal opened to business in 1822. Its length is 66 miles, including Waterford

side-cut and Cohoes and Saratoga dams. The size of prism was 40 feet wide on the top water-line, 26 feet wide on the bottom, and 4 feet depth of water; the locks, 110 by 18 feet. The size in 1870 was changed to 58 feet wide on the top water-line, 44 feet wide on the bottom, with 6 feet depth of water. Boats the size of those navigating the Erie, drawing 5 feet of water, are now used on this canal. From its junction with the Erie Canal to 1 mile north of Waterford the supply of water is from the Mohawk River to Cohoes; from 1 mile north of Waterford to the Saratoga dam, at Northumberland, the supply is from the Hudson River; from Northumberland to Whitehall the supply is from the waters of the upper Hudson through the Glens Falls feeder, supplemented on the north by Wood Creek at Fort Ann. The supply from the watersheds to the upper Hudson has decreased to such an alarming extent, caused principally by droughts and the destruction of the forests in this region, that no surplus water has existed during the past season, the quantity being sufficient only by economical management to meet the demand.

Oswego Canal.—This canal extends from Lake Ontario, at the city of Oswego, to the Erie Canal, at Syracuse. Its construction was authorized in April, 1825, and it was completed in December, 1828. Its total length is 38 miles, made up alternately of seven river and ten canal portions, the former 18 miles in length and the latter 17 miles; section work connected with structures, 3 miles.

From the lake to the level of the Erie Canal at Syracuse the rise was 156.85 feet, which was overcome by 18 lift-locks. Elevation above tide-water: Lake Ontario, 243 feet; Syracuse, 399.85 feet. The size of the prism was 40 feet wide at the top water-line, 26 feet wide on the bottom; the depth of water, 4 feet. There were 18 locks, 90 by 15 feet, and 6 guard-locks.

The average burden of boats was 70 tons. In 1847 the enlargement of the locks on this canal, and in April, 1854, the enlargement of the canal was authorized. It was completed in September, 1862. The size of the prism is 70 feet wide on the top water-line, 56 feet on the bottom, and 7 feet depth of water. It has 18 locks, 110 by 18 feet, and 5 guard-locks. The total lift is 155.55 feet, and the supply of water is from the Erie Canal and the Oswego River. The burden of the boats is from 230 to 240 tons. Elevation above tide-water: Lake Ontario, 245.15 feet; Syracuse, 400.70 feet.

Oneida Lake Canal.—The Oneida Lake Canal to South Bay is 5.30 miles in length. Level No. 1 is 428.40 feet above tide-water; Oneida Lake above tide-water, 366.40 feet. Total lockage, 62 feet. Owing to the scarcity of water on the Rome level and the insecurity of its banks, this canal has not been open for navigation this season, and therefore is classed among the abandoned canals.

Oneida River improvement.—The Oneida River improvement, extending from Three River Point to Brewerton, is 20 miles in length and consists of two lift-locks, one at the outlet of Oneida Lake and one about half-way down the river, and an outlet lock at the Oswego River, securing a navigation from the Oswego Canal to the Lake, which is 24 miles long, and connects the Erie Canal by the Oneida Lake Canal.

Chenango Canal.—The part of this canal not abandoned but used as a feeder is 31 miles, extending from Utica to the first culvert south of Hamilton, and is only used as a feeder through which the waters from the reservoirs in Madison County are fed into the Erie Canal, and is not navigable. It is classed with the abandoned canals.

Black River Canal and improvement.—The building of this canal, extending from Rome to Lyons Falls, was authorized in 1831, but was not completed until 1849. The summit level of this work is 1,121.40 feet above tide-water. Its total length is 35.50 miles; ascending lockage from Rome to summit, at Boonville, 693 feet; descending lockage from the summit level to the Black River, below Lyons Falls, 387 feet, with 110 locks.

The Black River improvement was authorized in 1836, the law requiring that the river be so improved as to make the same navigable for steamboats drawing 4 feet of water from the High Falls to Carthage. Work was not begun until September, 1857, and was completed in 1861.

Cayuga and Seneca Canal.—The Cayuga and Seneca Canal, including the Ithaca inlet, at Ithaca, is 24.77 miles in length, and extends from the Erie Canal at Montezuma to the Seneca and Cayuga Lakes. The length of the main canal is 22.77 miles, and that of Ithaca Inlet 2 miles.

It is an important canal, principally because of its connections, forming with it a line of interior navigation, formerly from Montezuma south to the Chesapeake Bay. The work of construction was commenced in 1825 and completed in 1839. The enlargement was commenced in 1855.

Descending lockage from Geneva to Cayuga outlet, 63.58 feet; ascending lockage from outlet of Erie Canal to Montezuma, 13 feet; level No. 1, at Geneva, 441 feet above tide-water; level No. 9, at Cayuga outlet, 378 feet; level No. 11, at Montezuma, 392.07 feet.

The following is a synopsis of the annual report of the State engineer and surveyor,

Silas Seymour, esq., relative to the canals of the State of New York, made to the legislature for the year ending December 31, 1883:

The following canals are now owned and operated by the State—

	Miles.
The Erie, extending from Albany to Buffalo	352.18
The Champlain, extending from West Troy to Whitehall	66.00
The Oswego, extending from Syracuse to Oswego	38.00
The Cayuga and Seneca, extending from Montezuma to Cayuga and Seneca Lakes	22.77
The Black River, extending from Rome to Lyons Falls	35.33
Total length of canals proper	514.28
Total length of all the canals, river improvements, navigable feeders, slips and basins	644.22
Total length of unnavigable feeders	83.74
Total	727.96

The canals are divided into three divisions, viz: Eastern, Middle, and Western. There are about four thousand boats now engaged in transportation; ninety-two by steam, the others by animal power. The large class boats are capable of carrying 240 tons of 2,000 pounds each—equal to say 8,000 bushels of wheat. The average time for round trip, Buffalo to New York City, is twenty-eight days.

The use of steam in place of animal power for propulsion has thus far proved successful. It is a question, however, whether it will not be found advisable to provide only sufficient power to propel a single boat, rather than one boat and one or more consorts, so as to avoid the delays of lockages, &c.

The condition of the canals is deteriorating, from the fact that the legislature only appropriated an amount sufficient for ordinary expenses, instead of a sum adequate to place them in thorough repair. It appears that the berme and tow-paths have settled more or less; silt and sediment have accumulated; slope and pavement walls require relaying; vertical walls are constantly tumbling down, and the docking is in bad condition.

Liberal appropriations should be made and the thorough and complete repair of the canals should be insisted on, and calls for a speedy consummation.

The estimated cost of placing the canals in thorough repair is as follows:

Erie Canal	$2,208,214
Champlain Canal and Glen Fall's feeder	1,089,229
Oswego Canal	90,000
Cayuga and Seneca Canal	42,000
Black River Canal and improvements	70,000
Chenango and Oneida Lake Canals	3,000
Total	3,502,443
Adding the usual allowance of 10 per cent. to cover the cost of engineering and contingencies	350,244
Grand total	3,852,687

Since the completion of the enlargement of 1862, when the canals were supposed to have been in their best condition, they have been steadily deteriorating, as the appropriations by the legislature have never been enough to keep them in complete repair, and barely sufficient to meet those emergencies caused by breaks, floods, &c., so often encountered in canal navigation.

The sources of the supply of water for the canals remain the same. Suggestions are made for increasing the supply at a moderate cost to the State. The greatest economy had to be observed to meet the demands of navigation last season, as the rivers and other important streams used as feeders from Albany to Montezuma were unusually low.

The foregoing are the principal topics alluded to of general interest in said report.

It should be remembered that when the first enlargement of the Erie Canal was in contemplation, it was asserted as an engineering theory, that if it was increased in capacity, so as to admit the passage of boats three times the burden of those in use, the cost of transportation would be reduced 50 per cent. After the enlargement was completed and the larger boats came into use it was found that the reduction was *50¼ per cent.*, fully proving the correctness of the calculations of the engineers. It

now asserted that another such enlargement will produce the same relative results, that the cost of transportion would be again reduced 50 per cent. below present st.

A re-enlargement of the canal would permit the use of steam canal boats of the rden of between 700 or 800 tons, which could carry one bushel of wheat from Buf-o to New York for 2 cents per bushel, a rate so low as to discourage all cutting of ilroad freights below a living price and immediately effect a saving to the wheat owers in the West and Northwest of more than $2,000,000 per annum. This saving ould be increased annually as the production increased; besides, such cheap trans-rtation would tend to the extension of production still farther west and northwest, the far-off central regions.

A re-enlargement of the canal such as is here alluded to would not be very costly, it would not necessitate any changes in the water supply, or of the acqueducts and ɜders.

There is no canal anywhere to compare with the Erie in respect to the benefits it con-rs or can confer. It should not be lightly cast aside or allowed to go to ruin, or, hat would probably be equivalent to ruin, pass into corporate or individual hands.

CANADA.

SAINT LAWRENCE NAVIGATION.

The Saint Lawrence navigation extends from the Straits of Belle Isle to Fond du c, at the head of Lake Superior, a distance of 2,384 statute miles.

The Canadian canals on this route are the Lachine, the Beauharnois, the Cornwall,) Farran's Point, the Rapide Plat, the Galops, and the Welland. Their united gth when originally constructed was (70.83) about 71 miles, and the total lockage ½ feet through fifty-four locks. (The Farran's Point, Rapide Plat, and Galops nals are also known under the name of the Williamsburgh Canals.)

From the report of the commissioner of public works for 1867, the following con-nsed particulars have been obtained:

THE LACHINE CANAL.

Length, 8¼ miles; number of locks, 5; dimensions of locks, 200 by 45 feet; total e of lockage, 44¼ feet; depth of water on sills, 16 feet on 2 locks, and 9 feet on ocks; breadth at bottom, 80 feet; breadth of water surface, 120 feet.

Immediately above Montreal City the first serious rapids that bar the ascent of the ver are encountered. They are known as the Saint Louis Rapids (Sault Ste. Louis), id the necessity of surmounting them gave rise to the construction of the Lachine anal on the island of Montreal, extending from Montreal City to the village of La-ine.

In 1815 the legislature passed a bill granting the promoters of the canal a sum of oney to aid its construction, but nothing was done. In 1819 the bill was repealed id another bill passed incorporating a joint stock company with a capital of $600,000. In January, 1821, this company presented a petition to the house, setting forth that ey had secured the services of a civil engineer from England, who had prepared ans and surveys, but that not more than one-half of the shares had been subscribed r. The company asked the Government to take stock in the undertaking. The tition was referred to a committee, and the result was the passage of a bill, May , 1821, repealing the act under which the company had been organized and empow-ing the Government to construct the Montreal and Lachine Canal as a provincial ork. Commissioners were appointed, and on the 17th July, 1821, ground was broken Lachine.

The canal was opened August, 1824, and in 1825 vessels were for the first time ssed through. In 1841 an enlargement was proposed so as to accommodate lake-ping vessels from Lake Huron to Quebec. In 1843 it was commenced and opened in e spring of 1848.

THE BEAUHARNOIS CANAL.

Length, 11½ miles; number of locks, 9; dimensions of locks, 200 by 45 feet; total e of lockage, 82½ feet; depth of water on sills, 9 feet; breadth at bottom, 80 feet; eadth of water surface, 120 feet.

This canal connects Lake Saint Louis with Lake Saint Francis; the distance from e head of the Lachine Canal across Lake Saint Louis to the foot of the Beauharnois anal is 15½ miles. In the distance overcome by the canal are three rapids, viz, the scade, the Cedars, and the Côteau. This canal lies on the south side of the Saint awrence and runs some distance inland.

Various plans were at different times submitted to Parliament for the formation of this canal, and it was not until 1842 that the plans and surveys of the present route were adopted and contracts entered into for its construction. The works were completed in the late fall of 1845. Since many important additions and improvements were made to remedy defects which need not be here enumerated.

THE CORNWALL CANAL.

Length, 11¼ miles; number of locks, 7; dimensions of locks, 200 by 55 feet; total rise of lockage, 48 feet; depth of water on sills, 9 feet; breadth at bottom, 100 feet; breadth of water surface, 150 feet.

This canal extends from the town of Cornwall to Dickenson's Landing, following the north shore of the Saint Lawrence River, and overcomes the Long Sault Rapids. The distance from the head of the Beauharnois Canal through Lake Saint Francis to the foot of the Cornwall Canal is 32½ miles.

As early as 1816 the attention of the Parliament of Upper Canada was drawn to the subject of inland navigation. In 1818 the Lower Canadian Government took the matter up as well. The result was that a joint committee was appointed and the details of many plans were considered and several reports made. Nothing was done, however, untill 1832, when the House of Assembly resolved "That it is expedient to commence improvements between Cornwall and the head of the Long Sault Rapids," and appropriated $280,000 for that purpose. One of the conditions of this act was that the Cornwall Canal should be commenced and finished before any of the other projected works leading to Lake Ontario should be undertaken.

In 1833 the engineers appointed reported five canals as being necessary for establishing a communication between Lakes Saint Francis and Ontario, namely, the Cornwall, the Farran's Point, the Rapide Plat, the Pointe Cardinal, and Les Galops.

Work was commenced on the Cornwall Canal in 1834; slow progress was made during 1835 and 1836; in 1838 work was suspended in consequence of financial embarrassments stated to have been caused by the exorbitant demands made for damages to property. The works were resumed in 1842, and in June, 1843, the canal was formally opened.

THE FARRAN'S POINT CANAL.

Length, three-fourths of a mile; number of locks, 1; dimensions of locks, 200 by 45 feet; total rise of lockage, 4 feet; depth of water on sills, 9 feet; breadth at bottom, 50 feet; breadth of water surface, 90 feet. From the head of the Conwall Canal to the foot of Farran's Point Canal the distance on the river Saint Lawrence is 5 miles. Construction commenced 1844 and was completed October, 1847. Vessels descending do not enter the canal, but run the rapids with ease and safety. The canal lies on the north side of the river and extends from the foot to the head of the rapids.

THE RAPIDE PLAT CANAL.

Length, 4 miles; number of locks, 2; dimensions of locks, 200 by 45 feet; total rise of lockage, 11½ feet; depth of water on sills, 9 feet; breadth at bottom, 50 feet; breadth of water surface, 90 feet.

The distance from the head of Farran's Point Canal to the foot of the Rapide Plat Canal, following the channel of the Saint Lawrence, is 10½ miles. This canal extends from Morrisburgh to the head of the swift current, and overcomes the Rapide Plat rapids. It is used by ascending vessels only. The canal is on the north shore. Surveys were made in 1843, work commenced 1844, and were completed late in the year 1847.

THE GALOPS CANAL.

Length of canal, 7¾ miles; number of locks, 3; dimensions of locks, 200 by 45 feet; total rise of lockage, 15½ feet; depth of water on sills, 9 feet; breadth at bottom, 50 feet; breadth at water surface, 90 feet. This canal avoids the rapids at Pointe au Iroquois, Point Cardinal, and the Galops, and is on the north bank of the river. The distance from the head of the Rapide Plat Canal to the foot of the Galops Canal, following the Saint Lawrence, is 4½ miles. The plans for the construction of this canal were considered as early as 1833. Work was commenced about 1844 and the original canal opened 1846 and 1847, but additions and changes became necessary, which were commenced in 1851 and brought to a completion in 1856.

THE WELLAND CANAL.

Length of main line, 27½ miles; number of lift-locks, 27; number of guard-gates, 3; dimensions of locks: 2 locks, 200 by 45 feet; 24 locks, 150 by 26½ feet; 1 lock, 330 by 45 feet; total rise of lockage, 330 feet; depth of water on sills, 10½ feet; breadth at *bottom ranging* from 26 to 90 feet, and at surface, 58 to 200 feet.

The distance from the head of the Galops Canal, following the channel of the Saint Lawrence and through Lake Ontario to Port Dalhousie, at the foot of the Welland Canal, is 236¼ miles. The main line of the canal extends from Port Dalhousie, Lake Ontario, to Port Colborne, Lake Erie.

It has several branches and feeders, namely, the Welland River branches, the Grand River feeder, and the Port Maitland branch, in all about 24 miles.

One of the Welland branches is the Chippewa branch, descending from the main line into the Welland River, at Port Robinson, by means of a lock, whereby vessels may ascend or descend. A run of about 9 miles through the Welland River and Chippewa Creek enables a vessel to enter Niagara River 2 miles above the Falls of Niagara and passing up that river enter Lake Erie opposite Buffalo.

The Grand River feeder which supplies the water for the whole canal and its branches is a navigable canal itself, being 26 feet wide at the bottom with a breadth at surface of water varying from 60 to 70 feet and having a navigable depth of 8 feet. The head of the feeder is at Dunnville, in the Grand River, at which point there is a dam of 564 feet in length, retaining the waters of this river and affording slack-water navigation as far as Cayuga, some 16 miles up the Grand River above Dunnville.

The Port Maitland branch descends from the navigable feeder to Port Maitland, at the mouth of the Grand River, one of the safest harbors on Lake Erie. The breadth at bottom of this section is 45 feet and at the water surface 85 feet; navigable depth 9 feet.

It is thus shown that the Welland Canal communicates with Lake Ontario only at Port Dalhousie, while it communicates with Lake Erie at three points, viz, Port Colborne, Port Maitland, and Port Robinson via the Welland and Niagara Rivers.

Niagara River, between Lakes Ontario and Erie, is about 30 miles in length and runs almost direct south and north. Port Dalhousie, on Lake Ontario, is about 11 miles west of the point where the Niagara River discharges itself into that Lake, whilst Port Colborne, on Lake Erie, is 16 miles west of the upper end of the same river, and Port Maitland, at the mouth of the Grand River, is 17 miles still further to the westward. Thus it will be understood that the Welland Canal runs about north and south, that its line is nearly parallel with the Niagara River, and that it is from 2 to 15 miles west of it. The Welland River flows from west to east, and crossing the line of the Welland Canal discharges into Niagara River at Chippewa, a village about 5 miles from Lake Erie and about 2 miles above the Falls of Niagara.

With regard to the history of the construction of the Welland Canal it appears that in 1816 a sum of money was asked to be appropriated by parliament to obtain surveys of water routes between the Lakes Ontario and Erie. The matter died in committee. In 1818 the inhabitants of Niagara petitioned for the formation of a canal between Lake Ontario and Chippewa, on the Welland River. The committee to whom the matter was referred reported favorably and suggested that a company should be formed to carry out the project.

In 1824 a company was incorporated to construct a canal and railway under the title of the "Welland Canal Company." The canal was to be a "boat canal," and the expense was not to exceed $92,000. Ground was broken the same year. Nothing further was done until 1825, when a line was projected sufficiently large to admit schooners and sloops and was adopted by the board of directors. The canal was to be supplied with water from the Welland River. Vessels passing from Lake Erie to Lake Ontario were to descend the Niagara River as far as the mouth of the Welland (Chippewa Creek); thence ascend the river 8¼ miles to Port Robinson; thence entering the canal on a level with the Welland River 9 feet below the level of Lake Erie, they would cross the ridge through a deep cutting and afterwards descend to Lake Ontario by locks.

At that early day it was admitted that the passage of vessels down the Welland and up the Niagara River was highly objectionable, for the reason that the course was circuitous and the rapid current of the Niagara River a serious obstacle for loaded vessels to encounter.

Numerous plans were suggested and many changes adopted, and at last the directors raised money sufficient to commence operations in 1825. By the aid of Government loans and other means the works progressed slowly; new plans and alterations were suggested and made continually. Finally, to make a long story short, in 1829 water was let into the canal on November 30, and two schooners, one 85 tons and the other smaller, ascended from Lake Ontario into the Welland River. From that point the vessels ascended two locks into the "Deep Cut," and from there into Lake Ontario, a distance of 16¼ miles.

In 1831 the extension of the main line of the canal over the Welland River to Port Colborne was deemed desirable. The Government approved of the project and granted a loan of $200,000 to assist in carrying it out. The works were completed in 1833. This may be considered as the opening of the present Welland Canal.

From 1833 to 1841 various recommendations were made relative to the water supply, the locks, the depth of the canal, the enlargement and deepening of the termini

at Ports Colborne and Dalhousie, &c. In 1841 it was decided that the locks should be rebuilt of stone and enlarged; the feeder converted into a navigable canal, &c. A sum of $2,190,000 was appropriated by the Government in 1841. The new works were commenced in 1842. In 1843 it was determined that the level of Lake Erie should be adopted and the water supply obtained therefrom, instead of from the Grand River, and the work of lowering the summit level was begun in 1846. Many other changes were made, but it is impossible in our brief space to enumerate all in detail.

To meet the demands of trade it was decided in 1853 to deepen the canal to 10 feet of water on the miter sills, and in 1854 to increase the bottom width of the summit reach to 50 feet. In the lower reaches of the canal the increased depth of 10 feet was obtained by raising the banks, but in the summit level the increased depth could only be obtained by excavation. Contracts were entered into in 1854 for the deepening and widening of the whole summit level, &c.

The necessity of still further enlarging the Welland Canal is discussed and new lines proposed; one making the mouth of the Niagara River, Lake Ontario, a terminus as well as Port Dalhousie, at a cost of $4,000,000.

The total expenditures on the construction of the Welland Canal up to June 30, 1867, was $7,638,239.83.

The following table shows the size of the smallest locks on the canals and the dimensions of the largest vessels which may pass through them (1867):

Canals.	Dimensions of locks.			Dimensions of vessels.			
	Length.	Breadth.	Depth on sill.	Length.	Breadth.	Draught, loaded.	Tonnage.
	Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	
Saint Lawrence	200	45	9	186	44½	9	600
Welland	150	26½	10½	142½	26½	10	400

The following historical points relative to the construction of the Saint Lawrence and Welland Canals are condensed from a memorandum prepared by the Canadian Government for the Paris Exhibition of 1878. Towards the end of the last century the necessity of establishing easy and direct communication between all points on the Saint Lawrence River was clearly recognized, and the first step in that direction was the removal of obstructions from the river Saint Pierre, between Montreal and Lachine, across the marshes now traversed by the Lachine Canal, the construction of four canals at the places known as Faucilles, Trou-du-Molin, Rocher Fendu, and Coteau Rapids, between lakes Saint Louis and Saint Francis, on the river Saint Lawrence, and of another at the village of Mille Roches, on the south side of the Cornwall Canal. These canals were of small dimensions, and were designed to serve only for boats carrying *thirty* barrels of flour. The locks were of cut stone, only 6 feet wide, with 2½ feet of water on the sills. In 1804, and again in 1817, these old canals were repaired and enlarged; their width was increased to 12 feet, depth on sills to 3½ feet, so as to accommodate a vessel with a load of 100 barrels of flour.

The preceding paragraphs briefly show the principal historic facts prior to June 30, 1867. The following particulars have been obtained from later voluminous publications of the Canadian Government and other sources of information:

In 1867 the canals and works on navigable rivers, constructed by the Provincial Governments previous to July 1, 1867, were placed under the control of the department of public works.

In 1879 the department of public works was divided into two departments, presided over and managed by two ministers—(1) minister of railways and canals; (2) minister of public works.

The canals by this act came under the management of the minister of railways and canals, and the ports, harbors, rivers, &c., under the minister of public works.

In 1871 the enlargement of the canals on the river Saint Lawrence and the Welland Canal was decided upon. The scale of navigation was fixed throughout at an available depth of 12 feet of water. The authorization was effected in 1873.

In 1874, however, strong representations were made urging the desirability of deepening the various channels for the passage of vessels drawing 14 feet of water. This after a time was assented to by the Government, and orders were issued to have the foundations of all permanent structures, on those parts of the works not then under contract, placed at a depth corresponding to 14 feet water on the miter sills of the locks.

nder these directions in 1875 the works on the Lachine, Cornwall, and Welland als were proceeded with. The necessary instructions were first given in relation ıe Welland, but were subsequently extended to all the principal works between :e Erie and the city of Montreal.

he locks on the enlarged canals were to be 270 feet long between the gates, 45 feet ridth and to have a depth of 14 feet of water on the sills.

he enlargement of the Lachine Canal has since been completed, and the Welland al practically so. Two of the lower locks of the Cornwall have been finished.

he following statement shows that to the 30th June, 1882, $34,374,576.33 had been ended on the construction of the canals, namely:

Lachine	$8,166,696 75
Beauharnois	1,680,178 51
Cornwall	2,522,519 81
Williamsburgh	1,321,732 54
Saint Lawrence (generally)	354,720 64
Welland	20,328,728 08
Grand total	34,374,576 33

he following shows the *present* dimensions of the canals:

he Lachine.—Length, 8¼ miles; number of locks, 5; dimensions of locks, 270 by 45 ; total rise of lockage, 45¼ feet; depth of water on sills, 16 feet on two locks and 14 on three locks; breadth of bottom, 120 feet; breadth of water surface, 150 feet.

he Beauharnois.—Same as before stated—new works not completed.

he Cornwall.—Same as before practically, as works not completed—(two locks have n enlarged).

he Williamsburgh.—Same as before stated—new works not completed.

he Welland.—Length of main line, 26¾ miles; number of lift locks, 25; number of rd gates, 3; dimensions of locks, 270 by 45 feet; total rise of lockage, 326¾ feet; th of water, 13 feet; depth on miter sills, 12 feet; breadth of bottom, 100 feet; adth of water surface, 152 feet—vessels of 1,000 to 1,100 tons measurement, carry- from 1,200 to 1,400 ton cargoes, can now navigate the Welland. The towing hs are each 15 feet wide at top and are 4 feet above the water in the canal. The r aqueduct at Welland is now in course of construction. Where the canal is car- l over the Welland (or Chippewa) River by an aqueduct, pending the building of enlarged aqueduct, great care is necessary at periods of low water; vessels can- draw more than 11½ feet with safety; this is especially the case during a continu- e of strong easterly winds.

'rom Port Dalhousie to Allanburgh, 11¼ miles, there are now two distinct lines of al in operation, the old line and the new enlarged one. From Allanburgh to Port borne, 15 miles, there is only one channel, the old canal having been enlarged.

)uring 1883, ending June 30, a large number of sea-going vessels entered the La- ne Canal. Traffic was carried on night and day. The current has been reduced ıuch an extent that the large-sized barges which previously to the enlargement re- red from six to eight span of horses to tow them up the canal when drawing 8 t of water, can now be towed by two pairs of horses. The time required by a ımer to pass through the entire length of this canal, including locking, is two and alf hours. Barges towed by a steamtug can pass in three hours; those towed by ses four to five hours. The lock-gates are now protected by cables in such a man- as to prevent the gates from getting displaced. The depth of water on the miter s of Lock No. 1, at lower entrance varied, from January to June, 1883, from 20.10 : to 32.10 feet; from July to December, 1882, from 16.6 feet to 30.2 feet. At Lock 5, at the upper entrance, from January to June, 1883, from 8.11 feet to 14.4 feet; n July to December, 1882, from 10.2 feet to 13.6 feet.

)uring 1883 large propellers, barges, and schooners passed through the new Wel- d Canal, carrying from 40,000 to 60,000 bushels of grain. The banks of the canal l reservoirs between Port Dalhousie and Thorold have been faced with stone ɔughout, preventing any further washing away of the slopes. Trees have been nted along same line, so that in the future they will afford a protection for vessels n wind-storms and prevent the necessity of tying them up. The depth of water ɛntrance of canal at Port Colborne, Lake Erie, during the year ending June, 1883, ied from 11 feet to 15.1 feet; at Port Dalhousie, Lake Ontario, from 11.8 feet to 3 feet.

he depth of water at entrance of the Gallops Canal, River St. Lawrence, during year ending June 30, 1883, varied from 6.9 to 12 feet.

Years.	Total tonnage of vegetable food moved through the Welland Canal.	Tonnage of heavy goods, such as iron, salt, ores, and coal.	Tonnage of vegetable food cleared downward.	Tonnage of vegetable food in transit between United States ports.	Tonnage of heavy goods.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
1869	503, 860	375, 623	479, 882	337, 530	235, 932
1872	538, 147	423, 678	524, 829	234, 337	242, 264
1873	579, 880	543, 387	563, 813	243, 366	292, 176
1874	647, 397	431, 316	620, 933	374, 226	260, 895
1875	417, 936	397, 565	374, 962	177, 908	244, 451
1876	409, 788	378, 540	384, 807	162, 405	227, 844
1877	464, 181	399, 109	448, 931	180, 586	239, 975
1878	403, 403	338, 741	389, 296	128, 361	178, 723
1879	438, 564	245, 670	430, 795	87, 826	148, 741
1880	442, 182	176, 983	417, 853	48, 580	92, 954
1881	269, 395	189, 188	235, 752	65, 285	97, 205
1882	306, 482	283, 984	275, 594	64, 002	177, 161
1883	372, 326	365, 105	355, 335	132, 496	229, 471

The following statement shows the grand total tonnage carried on the Welland and Saint Lawrence Canals during the season of navigation for three years:

Canals.	1881.	1882.	1883.
	Tons.	*Tons.*	*Tons.*
Welland	686, 506	790, 643	1, 005, 156
Saint Lawrence	957, 446	911, 050	856, 786
Totals	1, 643, 952	1, 701, 693	1, 861, 942

The following statement shows the tonnage and nationality of vessels passing the Welland and Saint Lawrence Canals for two years:

1882.	Welland.	Saint Lawrence.
	Tons.	*Tons.*
Canadian, steam	170, 831	944, 734
Canadian, sail	320, 972	832, 899
United States, steam	37, 969	32, 655
United States, sail	192, 279	102, 776
Tonnage, total	722, 071	1, 913, 025

1883.	Welland.	Saint Lawrence.
	Tons.	*Tons.*
Canadian, steam	161, 503	875, 781
Canadian, sail	337, 069	871, 830
United States, steam	127, 702	22, 394
United States, sail	344, 693	78, 570
Tonnage, total	890, 967	1, 847, 895

The tolls received on the Welland and Saint Lawrence Canals for two years were as follows:

Canals.	1882.	1883.
Welland	$144, 325 44	$126, 377 65
Saint Lawrence	111, 765 45	110, 394 40
Total tolls	256, 090 89	236, 772 05

Opening and closing of the Welland Canal from 1854 *to* 1883 *(both years inclusive).*

Year.	Opening.	Closing.	Year.	Opening.	Closing.	Year.	Opening.	Closing.
1854	Mar. 3	Dec. 4	1864	Apr. 13	Dec. 11	1874	Apr. 9	Dec. 10
1855	Mar. 16	Dec. 12	1865	Apr. 17	Dec. 15	1875	Apr. 3	Dec. 15
1856	Mar. 26	Dec. 13	1866	Apr. 17	Dec. 11	1876	Apr. 17	Dec. 15
1857	May 1	Dec. 15	1867	Apr. 23	Dec. 7	1877	Apr. 17	Dec. 5
1858	Apr. 7	Dec. 1	1868	Apr. 15	Dec. 9	1878	May 9	Dec. 14
1859	Apr. 1	Dec. 8	1869	Apr. 21	Dec. 10	1879	May 5	Dec. 5
1860	Apr. 1	Dec. 6	1870	Apr. 20	Dec. 16	1880	May 1	Nov. 30
1861	Apr. 8	Dec. 12	1871	Apr. 5	Dec. 9	1881	Apr. 29	Dec. 15
1862	Apr. 15	Dec. 15	1872	Apr. 22	Dec. 10	1882	Apr. 20	Dec. 5
1863	Apr. 13	Dec. 13	1873	Apr. 21	Dec. 15	1883	Apr. 5	Dec. 12

The following statement is taken from the Canada Inland Revenue Report for the year ending June 30, 1879:

Canal statistics showing the increase or decrease in the tonnage of flour and grain and other vegetable food passing through the New York canals and the Welland Canal, as compared with the movement of 1869, *the year before the reduction of tolls on the Erie Canal took place.*

Years.	New York canals.		Welland Canal.	
	Increase.	Decrease.	Increase.	Decrease.
1870	.....	.58	18.43	.....
1871	42.08	.....	32.59	.....
1872	28.53	.....	23.73	.....
1873	33.97	.....	7.18	.....
1874	35.69	.....	23.55	.....
1875	.22	.....	1.61	.....
1876	.....	18.29	.....	9.69
1877	15.07	.....	.....	19.30
1878	46.83	.....	.....	12.89
1879	40.75	.....	.....	16.10

The improvements in the transportation facilities of Canada are shown in the summary of the history of the Lachine and Welland Canals, and also of the progress made in the construction of railways. The enumeration of all the works completed and in progress for the benefit of commerce would fill a volume if given in detail. A few of the most important enterprises will be briefly noticed:

The construction of a ship canal through and the deepening of Lake Saint Peter; dredging a channel through Lake Saint Clair Flats, completed with the assistance of the United States Government; the Rideau and the Burlington Bay Canals; a system of works comprising the Richelieu and Lake Champlain navigation; harbors and piers on navigable rivers and the lakes; the whole coast line of Canada, both ocean and inland, is divided into districts and a very complete system of light-houses and light stations is maintained.

In consideration of the annexation, then in contemplation, of the northwest territories, the government of the united provinces of Upper and Lower Canada caused surveys to be made with the object of deciding upon the best means of establishing a direct line of communication between Lake Superior and those territories. With the information obtained from all those surveys, a line of communication by land and by water was chosen in 1868, extending from Fort William, on Lake Superior, to Fort Garry, on Red River. Works of improvement were made on this line between that time and 1879, when the construction of the Canadian Pacific Railway was practically agreed on. Parties of surveyors formed to decide upon the most favorable route for the construction of a railway built on Canadian territory, and terminating at the Pacific Ocean, began their labors in June, 1871, and the report of the chief engineer of the survey was submitted to Parliament in 1872. Further surveys were made, work began in 1875, and continued until 1880. In 1881 the federal Parliament adopted the act relating to the Canadian Pacific Railway.

To show the progress of railway building in Canada, in 1850 there were only 38 miles of track in existence; in 1860, 2,173 miles; in 1870, 2,679 miles; in 1880, 6,891 miles; and in 1883, 7,533 miles.

Enlargement in progress of the Montreal and Ottawa route: The locks to be 200 by 45 feet; depth, 9 feet on sills, and depth in canals 10 feet.

Projected canals: The Bay Verte Canal; the Cedars Canal; the Tay Canal, and the Ottawa Ship Canal, from Montreal to Lake Huron, via Lake Nipissing and French River; the cost of the latter would exceed $12,000,000.

The principal improvements made and in progress in the province of Quebec, in connection with navigation are the deepening of the ship channel between Montreal and Quebec and the harbor of Montreal; also the docks at the mouth of the river Saint Charles and the graving dock at Levis, in the harbor of Quebec. The expenditures on these works up to June 30, 1882, were about $5,000,000. The channel between Quebec and Montreal *at low water* at present varies from 22 to 25 feet. The Government, at a cost of about $900,000, is now engaged in deepening the channel throughout to 27½ feet.

From a Canadian hand-book we learn that from Quebec to Montreal, 159 miles, the river is generally from 1 to 2 miles in width, with a depth of 45 to 100 feet for a distance of 45 miles above Quebec, and above that, except in many shoal places, it is of a depth of about 30 to 50 feet. At about two-thirds of the distance above Quebec the river widens out into the Lake Saint Peter, which is 20 miles in length by 9 in width, and with a general depth of 22 to 25 feet at lowest water. The tide, which rises 14 feet at Quebec, is gradually lost and becomes imperceptible at the lower end of Lake Saint Peter. The average current of the river is 2 miles per hour; not sufficient to affect navigation.

Mr. William J. Patterson, secretary of the Montreal Board of Trade, in his report for 1882, gives some very interesting particulars of the future prospects of trade via the lakes, &c. With regard to the Canadian channels for the future Lake Superior trade, during open navigation each year, the following five routes show comparative distances from Montreal, and indicate that the all-water route via the Welland Canal is 338 miles longer than the rail and water route via Midland City:

From Montreal to Fort William.

	Miles.
1. By river Saint Lawrence, Welland Canal, and Lakes Erie, Huron, and Superior	1,260
2. By railway to Goderich, thence by Lakes Huron and Superior	1,000
3. By railway to Owen Sound, thence by Georgian Bay and Lake Superior	980
4. By railway to Collingwood, thence by Georgian Bay and Lake Superior	970
5. By railway to Midland City, thence by Georgian Bay and Lake Superior	922

In his report he writes as follows:

"There will be a sixth line of rail and water communication on the opening of navigation in 1884. It is expected that the Canadian Pacific Railway will be completed to Algoma Mills, on Lake Huron, by the end of 1883, and three first-class, full-powered, swift propellers will ply between that place and Port Arthur, on Lake Superior, connecting these with the railway, whence passengers will take trains to Winnipeg and through to the foot of the Rocky Mountains.

"But there is to be another very important line of inland communication in the near future. Ere long the Canadian Pacific and the Grand Trunk Railways and their combinations will converge at and cross the Sainte Marie River by a bridge at the Sault, thence connecting with the Northern Pacific Railway, and affording it and its connections in the Northwestern States a short route to the seaboard.

"It is worthy of notice here that the export trade in wheat from Oregon (the cargo being taken on board ship at Portland, about 110 miles up the Columbia River, while some of it is lightered to Astoria) finds a good deal of its supply in the interior Territory of Montana, and even, it is said, in Dakota. The grain is put into sacks, and conveyed by water, in barges, a distance of 350 miles or more, there being at present two portages (each of about five miles, traversed by rail) within that distance, the transportation charges to Portland amounting to 33 cents to 35 cents per bushel The rate of ocean freight from Portland to Liverpool varies, say, from 2*s.* 6*d.* to 4*s.* sterling per cental, insurance costing 1¼ to 2 per cent. A good trip by sailing vessel occupies five months. It does not seem improbable, therefore, that when all-railway connections between Montreal and Sault Sainte Marie are completed, the Canadian freight and passenger traffic will be immensely augmented from Montana, Dakota, and Minnesota, the surplus products of these regions finding a better, because quicker and cheaper, transit to the Canadian inland ocean port and a nearer outlet there to European countries, than at any United States ports on the Atlantic seaboard."

The first week in September, 1884, the following telegram was sent from Portland, Oreg.: "The Northern Pacific Railroad issued a telegraphic circular yesterday announcing that it would carry grain from all points on its line in Washington Territory to Duluth, Minneapolis, and Saint Paul at $8 per ton, the same as the present rates from Portland." The circular also states that the rate of $7.60 can be secured via the

lakes to Liverpool or Glasgow, thus giving better through rates to shippers than via Cape Horn.

The cost of carrying one ton of wheat from Portland, Oreg., to Glasgow or Liverpool via Cape Horn varies from $15 to $20 per ton. That route involves the disadvantages to grain cargoes of twice crossing the equator. It takes from five to six months to make the voyage in the sail-vessels, which usually carry grain cargoes from the Pacific.

It would seem that the surplus grain grown in the vast Columbia River region will hereafter be taken to the Atlantic coast, on its way to Europe, through the lakes. Buffalo claims that her port is the destined point for transshipment, the grain leaving there either by railroad or by the Erie Canal on its arrival from Duluth and other Lake Superior ports.

The Canadians have been and are now earnestly seeking for the trade of the Northwestern States, as well as of their own territory, not only by the water routes, but by the Canadian Pacific Railway. The latter is opening up a fertile region larger than the Middle and New England States combined, and every effort will be made to lead its products through Canada to the seaboard. In opposition to this route Americans are in sharp competition for the traffic, doing all in their power by low freights by lake and canal to prevent the trade being diverted from the State of New York primarily. It would seem that the superior advantages of the port of New York as against Montreal and Quebec for ocean traffic (especially during the winter months) would be a great factor in its favor.

With regard to the condition of the Canadian Pacific Railway, Vice-President Van Horne, in the early part of September (this year), stated in substance as follows: I see nothing to prevent the completion of the whole railway from Callander to the Pacific Ocean by the 1st of September, 1885. The Government sections in British Columbia are well advanced and will be ready by July 1 next. The work has been well done and is of a substantial and high-class character. Beyond Stephen, the summit of the Rockies, 28 miles are now graded, and the rails will shortly be laid. The surplus wheat crop along the line of our road available for export will reach fully 6,500,000 bushels, and all through the Northwest the yield has been abundant. It is expected that a larger quantity of the surplus crop will be exported by way of Port Arthur this fall; the balance will be stored until spring, part at Port Arthur and part at the warehouses established throughout the Northwest. The company is now building a new elevator at Fort William. The company is doing considerable business in the transportation of cattle from Montana to Chicago. The live stock is driven up the line of railway, undergoing inspection at the boundary line." Being asked as to the progress of the work north of Lake Superior, Mr. Van Horne stated that 13,000 men are now employed there, and that the roadway has been completed 70 miles west of Sudbury.

Thirteen regular lines of steamers, besides transient ones, entered the harbor of Montreal during the season of 1882. Sail-vessels at that port decrease in number year by year. The difficult question of the just and equitable charge for towage, therefore, becomes less troublesome in consequence of this change in the system of ocean transportation. Port charges and harbor dues have been considerably reduced. Portwarden charges on grain have been abolished.

It is evident that the merchants of Quebec are anxious to have extra facilities afforded them by urging a further enlargement of the canals of the Saint Lawrence and the deepening of the channel from them to their port necessary for heavier tonnage. They do not want vessels to lighter at Kingston and transfer grain into barges; they require a uniform depth of water-way from Port Colborne to their port. They do not want vessels to stop at Montreal.

CANAL TOLLS.

With regard to the question of the abolition of tolls on the Saint Lawrence Canals, M. E. Miall, acting commissioner of the inland revenue department, Ottawa, under date of January 15, 1883, writing with reference to a memorial of the Montreal Corn Exchange Association for "abolition of toll on the canals," gives as his opinion, after due consideration, that a careful analysis of the several statements made leads to the conviction that, however powerful as a motto "Free Canals" may be as a sentiment, their importance as an economic fact is very trifling. "The fight," he says, "is not between the Saint Lawrence and New York State canals. It is between land and water-borne carriage, and the railroads have come out the victors." Montreal exports but one-fifth of the quantity of grain exported from New York. Further on he continues: "It is not the inland freight, whether by rail or water, that turns so great a proportion of Western grain to New York. It is the uncertainty of the export facilities from Montreal during the closing months of river navigation, and the necessarily higher rates, due to excessive pilotage, harbor and towage charges, at and below Montreal. * * * There seems to be little reason to doubt that if Montreal were as favorable a point for Atlantic freight as New York, the Saint Law-

rence canals would share with the Erie the water-borne grain traffic, instead of being able only to take one-fifth." Again he says: "The abolition of tolls on the Saint Lawrence and Welland Canals would result in a diminution of revenue to the extent of from $200,000 to $300,000 per annum."

Mr. Miall is not clear whether with a reduction or abolition of tolls the grain traffic would thereby be increased to any appreciable extent. It appears that, in his opinion, the memorial covers questions of greater importance than that of abolition of tolls. What they are can be seen from the concluding portion of his letter, which is here given:

"The charges upon foreign shipping entering the port of Montreal amount to from $1.25 to $1.50 per ton. A broad view of public policy may ultimately dictate the assumption by the Dominion of liabilities which have hitherto been considered local in character.

"The reduction in inward and outward freights, which will ensue from increasing competition amongst ship-owners at a port known to be comparatively cheap, would be a public gain, reducing the cost of every commodity brought into the country, and increasing the price of every bushel of produce sold by the Canadian farmer for export to foreign marts.

"This is a question worthy of serious and deliberate discussion, in the presence of which the smaller one, involving at best a trivial charge of some 20 cents per ton, becomes insignificant.

"A revision of the tariff rates per westward-borne freight, the abolition of all tolls on passengers, and a provision that vessels passing through the Saint Lawrence Canals would be entitled to free passage through the Welland, whether going through to Lake Erie or not, might be entertained, and might result in advantages to the carrying trade without loss of aggregate revenue.

"It is worthy of consideration, however, that the Washington treaty gives United States citizens the right to navigate our canals on the same terms as British subjects.

"The fishery clauses of the same treaty are open to be brought to an end by the stipulated twelve-months' notice.

"The question of reciprocity is beginning to show some signs of life.

In view of these facts it is wise to give away for nothing now that for which in a year or two we may obtain a full equivalent."

TOLLS ON THE WELLAND AND SAINT LAWRENCE CANALS.

The following statement is from the "The Canadian Canals," published by Williams Kingsford, C. E., in 1865:

Years.	Welland Canal, wheat per ton.*		Saint Lawrence Canals, wheat per ton.*	
	Up.	Down.	Up.	Down.
	Cents.	*Cents.*	*Cents.*	*Cents.*
1850	60	60	45	37½
1851 and 1852	45	45	45	37½
1853 to 1857	45	45	36	30
1858	30	30	30	25
1859	20	20	30	22
1860 to 1862†	(†)	(†)	(†)	(†)
1863 and 1864	20	20	25	15

* Ton of 2,000 pounds. † Practically free.

The following is from the reports and letters of the inland revenue department:

Years.	Welland Canal, wheat per ton.*		Saint Lawrence Canals, wheat per ton.*	
	Up.	Down.	Up.	Down.
	Cents.	*Cents.*	*Cents.*	*Cents.*
1865 to 1880	20	20	15	15
1881 to 1883	15	20	15	15
1884	15	20	15	7½

* Ton of 2,000 pounds.

Wheat, corn, and flour could, previous to 1881, and since then all articles can, having paid full tolls on the Welland Canal, pass the Saint Lawrence Canals free. Previous to 1881 iron and salt, and since then all articles, having paid full tolls to the Saint Lawrence Canals, can pass the Welland Canal free.

The following are historical facts relative to canal tolls, and are worthy of being remembered or kept for reference:

Order in council, 1851.—Vessels and goods passing any two of the canals to be allowed a deduction of 25 per cent. The canals from Kingston to Montreal to be considered one canal.

Order in council, 1853.—Wheat, corn, and flour, having paid full toll on the Welland Canal, allowed to pass down the Saint Lawrence Canals free of tolls.

Order in council, May 28, 1860.—Tolls abolished.

Order in council, April 15, 1863.—Tolls reimposed.

Order in council, April 16, 1864.—Wheat, corn, and flour, having paid full toll on the Welland Canal, allowed to pass the Saint Lawrence Canals free of tolls.

Order in council, April 21, 1881.—The following alterations were made in the existing rates of tolls:

"1. All through freight westwards, from Montreal to Lake Erie, shall continue to pay the existing tolls for passage through the Saint Lawrence Canals, but shall pass through the Welland Canal, free.

"2. All through freight eastwards, from Lake Erie to Montreal, shall continue to pay the existing tolls for passage through the Welland Canal, but shall pass through the Saint Lawrence Canals free.

"3. Goods shipped to any port west of the Saint Lawrence Canals, tolls upon which have already been paid for passage through such canals, may be reshipped for such ports and be passed through the Welland Canal free of tolls, in the same way as if they had been shipped through direct in the first instance.

"4. Whereas at present articles coming under the heading 'Class No. 4,' which comprises all articles not enumerated in the remaining classes, pay at the rate of 40 cents a ton for passage through the Welland Canal and 20 cents a ton for passage through the Saint Lawrence Canals, henceforward these unenumerated articles shall, if in transit westwards, pay 20 cents a ton for passage through the Saint Lawrence Canals, and be permitted to pass through the Welland Canal free; and if in transit eastwards, shall pay 20 cents a ton for passage through the Welland Canal, passing through the Saint Lawrence Canals free.

"5. All classes of goods, not otherwise provided for, comprised in classes 3 and 4, with the exception of coal, shall, if using the Welland Canal only, in transit westwards, pay 15 cents a ton. Coal, however, shall continue to pay, as at present, 20 cents a ton for passage either way.

"6 Rye, buckwheat, and any other grains not enumerated shall be classed as belonging to class 3 of the existing schedules of canal tolls."

Orders in council, May 26 *and June* 3, 1884:

Certified copy of a report of a committee of the honorable the privy council, approved by his excellency the Governor-General, in council, on the 26th May, 1884.

"On a report, dated the 26th May, 1884, from the acting minister of railways and canals, stating that strong representations have been made by the principal shippers and forwarders in Montreal and elsewhere, having for object the abolition of tolls on the Canadian canals, in order to meet a similar policy as respects the Erie Canal—

"The minister observes that assurances have also been given to the effect that a considerable reduction would be made in the harbor dues of Montreal and in the shipping rates on the lakes and river Saint Lawrence, in order to afford inducements to attract east-bound freight.

"The minister is of opinion that while it would not be expedient or proper for the Government simply to adopt a new policy of the total abolition of canal tolls without the authority of Parliament, it is desirable to meet as far as possible the representations of the shippers and forwarders, and as they are of the opinion, although he (the minister) does not fully share in it, that a large measure of relief would be afforded by the reduction, he (the minister) recommends that the canal tolls on wheat, Indian corn, oats, barley, and rye, shipped for Montreal or any other Canadian port east of Montreal, be reduced from 20 cents to 10 cents per ton, such reduction to be continued for the present season of navigation only.

"The committee concur in the above recommendation, and they submit the same for your excellency's approval.

"JOHN J. McGEE,
"*Clerk Privy Council.*"

"Certified copy of a report of a committee of the honorable the privy council, approved by his excellency the Governor-General, in council, on the 3d of June, 1884.

"On a memorandum, dated 3d June, 1884, from the acting minister of railways and canals, representing, in connection with the order of council, dated 28th May last, reducing by one-half the canal tolls payable on wheat, &c., shipped for Montreal, that the existing tolls on the Saint Lawrence Canals are 15 cents a ton, and that as under the aforesaid order wheat may now come down from Port Colborne to Montreal at a 10-cent toll, aninjurious discrimination would be made against shipments of grain from Canadian Lake Ontario ports; the minister accordingly recommends that the existing tolls, 15 cents a ton, upon grain shipped for Montreal, or any Canadian port east of Montreal, passing through the Saint Lawrence Canals, be reduced by one-half during the present season of navigation only, such grain comprising wheat, Indian corn, oats, barley, and rye.

"The committee submit the foregoing recommendation for your excellency's approval.

"JOHN J. McGEE,
"*Clerk Privy Council.*"

On the 4th June, 1884, Mr. E. Miall, the commissioner of inland revenue, issued the following notice:

"The collectors of canal tolls on the Welland Canal will continue to charge the full rate of tolls, and the reduction will be paid by the department as a refund, upon evidence being furnished by the shippers that the conditions required by the orders in council have been complied with."

Mr. William Kingsford, in his report on the Canadian canals, published in April, 1865, pp. 130, *et seq.*, says in substance:

In 1851 the tolls were divided into seven classes. Modifications both as to classification and rates were made in 1853, 1858, and 1859; and in the latter year wheat and flour were reduced to their minimum rate.

Wheat and flour were included in a different classification to corn, paying 5 cents more per ton, until 1863, when wheat and corn were placed in the same category, apart from flour, which still pays the additional 5 cents both in the Welland and Saint Lawrence Canals.

* * * The experiment of removing the tolls and making the canals free was tried in 1860. It was dictated by the hope of increasing the through traffic of the canals, and by these means extend the commerce of the country. It has not succeeded in doing so. The "boon conferred" made no change in the proportion of produce of the Western States seeking the Saint Lawrence.

The canal tariff of 1860 came into operation 19th May, by order of council, enacting that vessels passing through the Welland Canal should pay the regular tolls, but that 90 per cent. of the amount should be refunded whenever such vessel entered the Saint Lawrence Canals or reported at any Canadian port on the lake or river; that vessels coming up through the Saint Lawrence Canals should pay only 10 per cent. of the Welland tolls. The Saint Lawrence Canals were free.

The tolls were reimposed April, 1863. Some change was made from the schedule of 1859. On the Saint Lawrence Canals the rates up and down were equalized, on the ground that high tolls on the up trips had driven freight, to the railways. A great reduction was made on lumber (in the seventh class). The Welland tolls were increased from the rates of 1859, classes 3, 4, and 5 being each raised 5 cents, by which wheat and flour paid that additional rate per ton. Wheat, however, was placed in a different class, and continued at the toll of 1860.

The canal tariff of 1860 came into operation 19th May, by an order of council, enacting that vessels passing through the Welland Canal should pay the regular tolls, but that 90 per cent. of the amount should be refunded whenever such vessel entered the Saint Lawrence Canals, or reported at any Canadian port on the lake or river; that vessels coming up through the Saint Lawrence Canals should pay only 10 per cent. of the Welland tolls. The Saint Lawrence Canals were free.

It was held that this course would direct the carrying trade to Canadian channels, and that although the revenue derived from the tolls would be best, the incidental advantages arising from an increased trade would be more than an equivalent for the sacrifice. Likewise, that the revenue would be advanced by increased imports, paying increased customs duties, so that in the end the provincial exchequer would not suffer. This abandonment of revenue for three years, which would have amounted to $650,000, was a gain to the forwarders only, for no great increase, if any, of imports took place to equalize the amount of revenue lost by the abolition of tolls.

The following is the toll sheet published by an order in council, June 23, 1863:

tolls to be levied on vessels and cargoes passing through the Dominion canals, 1883.

s of tolls are divided into five classes as under, and are per ton, unless otherwise specified.]

Classes.	Passing westward through the Welland Canal only.	Passing eastward through the Welland Canal only.	Lake Erie to Montreal.	Saint Lawrence Canals, each way.	Chambly Canal and Saint Ours Locks, each way.	Burlington Bay Canal each way.	Rideau Canal, each way.	Ottawa Canals and Saint Anne's Lock, each way.	Ottawa to Saint John's, each way.
CLASS No. 1.									
eam, per ton	$0 01½	$0 01½	$0 02½	$0 00½	$0 00½	$0 01	$0 01½	$0 00½	$0 01½
il and other, per ton	0 02½	0 02½	0 03½	0 01½	0 01½	0 01	0 02½	0 01	0 02½
CLASS No. 2.									
s 21 years of age and upwards,	0 10	0 10	0 20	0 10	0 05		0 08	0 02½	0 09½
s under 21 years, each	0 05	0 05	0 10	0 05	0 02		0 04	0 01½	0 04½
CLASS No. 3.									
ment, and water lime; clay, lime, d; brimstone; corn; flour; iron, pig, and all other; plaster, gyp- lt; salt meats or fish, in barrels wise; agricultural products, vege- t enumerated; agricultural prod- imal, not enumerated; stone, for wheat	0 15	0 20	0 20	0 15	0 10		0 07	0 06	0 19½
CLASS No. 4.									
articles not enumerated	0 15	0 20	0 20	0 20	0 10		0 26	0 14	0 29
CLASS No. 5.									
	0 20	0 20	0 20	0 15	0 10		0 07	0 06	0 19½
npty, each	0 02	0 02	0 02	0 02	0 02		0 02	0 01	0 03½
s, each	0 05	0 05	0 05	0 02	0 02		0 02	0 01	0 03½
r 1,000 lineal feet	1 40	1 40	1 40	1 40	1 20		1 05	0 50	2 05
, per cord:									
sels	0 20	0 20	0 20	0 20	0 10		0 15	0 08	0 23
s	0 25	0 25	0 25	0 25	0 15		0 19	0 09	0 30½
	0 25	0 25	0 25	0 20	0 15		0 15	0 10	0 30
l spars, telegraph poles, per ton ic feet:									
sels	0 15	0 15	0 15	0 05	0 05		0 08	0 07	0 13½
s	0 20	0 20	0 20	0 10	0 10		0 15	0 10	0 22½
es:									
sels, each	0 01	0 01	0 01	0 00½	0 00½		0 00½	0 00½	0 01½
s, each	0 02	0 02	0 02	0 01	0 01		0 02	0 01	0 02½
ff, boards, plank, scantling, and mber, per M feet, B. M.:									
sels	0 30	0 30	0 30	0 15	0 10		0 11½	0 06½	0 20
s	0 60	0 60	0 60	0 30	0 20		0 19	0 09	0 36½
ber, per M cubic feet:									
sels	3 00	3 00	3 00	1 00	1 00		0 56	0 44	1 69
s	4 50	4 50	4 50	2 00	2 00		1 12	0 63	3 13
ff, woodenware, and wood partly tured, per ton of 40 cubic feet	0 40	0 40	0 40	0 40	0 25		0 30	0 20	0 55
per M	0 06	0 06	0 06	0 06	0 04		0 04½	0 02½	0 08
and fence rails:									
sels, per M	0 40	0 40	0 40	0 40	0 20		0 23	0 12	0 42
ls, per M	0 80	0 80	0 80	0 80	0 40		0 38	0 17	0 77
each standard log	0 08	0 08	0 08	0 08	0 05		0 06	0 06	0 13
headings:									
s, per M	0 40	0 40	0 40	0 20	0 15		0 15	0 10	0 30
per M	1 50	1 50	1 50	1 00	1 00		0 75	0 50	1 75
India, per M	0 75	0 75	0 75	0 60	0 25		0 45	0 25	0 65
rrels, sawn or cut, per M	0 08	0 08	0 08	0 04	0 03		0 03	0 02	0 06
per 100 pieces	0 50	0 50	0 50	0 50	0 40		0 38	0 15	0 67½
per 1,000 pieces	2 00	2 00	2 00	2 00	1 50		1 50	0 65	2 65
SPECIAL CLASS.									
rude (per order of council, Octo- 882)	0 15	0 05	.....	0 05	(*)		.....	.....	.....
	0 20	0 20	0 20	0 15	0 10		0 08	0 05	0 17½
rought, corded, and not suitable ng, per cord	0 75	0 75	0 75	0 60	0 37½		0 28	0 24	0 77½
ryolite, or chemical ore	0 05	0 05	0 05	0 05	0 05		0 05	0 05	0 05
	0 05	0 05	0 05	.....	.....		.....	.....	.....

Free under order in council of 1st April, 1873.

* Westward.

Coal to pass up all canals, except the Welland Canal, free of toll, as per order in council, June 7, 1869.

Logs, lumber, or other produce shall pass free of toll down the Chippawa Creek between the Aqueduct and Port Robinson, as per order in council, 18th May, 1863.

Iron ore, kryolite, or chemical ore, through one section or all the canals, per ton, 5 cents.

All goods having paid full toll through the whole line of the Saint Lawrence Canals, or through the Lachine Canal, Saint Ann's Lock, or Ottawa and Rideau Canals, shall be allowed to pass free through the Welland Canal; and if tolls have been paid at the Chambly Canal, such tolls shall be refunded at Montreal or Kingston Mills; and having paid full tolls through the Welland Canal, they shall be allowed to pass free through the Saint Lawrence Canals, or through the Ottawa and Rideau Canals, Saint Ann's Lock, the Lachine Canal, and the Chambly Canal; provided always that the articles to be entitled to the above exemptions shall go downwards through the whole length of the canal to Montreal, or pass upward from Montreal through the whole length of the Saint Lawrence Canals or the Ottawa and Rideau Canals to Lake Ontario.

All articles, goods, or merchandise not enumerated above to be charged to class No. 4.

No let passes to be issued to steam-tugs or other small vessels for less than 25 cents as a minimum charge; but such vessels not carrying freight or passengers can obtain, on payment of $30 a season, "let pass," which will pass them up and down the canal as often as desired.

Goods shipped to any port west of the Saint Lawrence Canals, tolls upon which have already been paid for passage through such canals, may be reshipped from such ports and be passed through the Welland Canal free of tolls, in the same way as if they had been shipped through direct in the first instance; and goods going eastward, having paid Welland Canal tolls, may be transshipped at any port on Lake Ontario, and thereafter pass free through the Saint Lawrence Canals, as if they had been shipped through direct in the first instance.

Standard for estimating weights.

Articles.	Tons.	Articles.	Tons.
2,000 lbs., avoirdupois	1	Stone, 12 cubic feet	1
Per M, is per thousand feet.		Stone, 1 cord	1½
Per mille is per thousand pieces.		Whisky, 4 barrels or 215 gallons	1
Green fruit, 9 barrels	1	Empty barrels, 10	1
Ashes, 3 barrels	1	Barrel-hoops 10 mille	1
Bark, 4 cords	1	Board and other sawed lumber, 600 feet, board measure	1
Beef, 7 barrels	1	Boat knees, 4	1
Biscuit and crackers, 9 barrels	1	Fire-wood, 1 cord	3
Bricks, common, 1,000	2	Hop-poles, 60, or 40 cubic feet	1
Butter, 22 kegs or 7 barrels	1	Shingles 12 M or bundles	1
Cattle, 3	1	Split posts and fence rails, 1 mille	1
Cement and water lime, 7 barrels	1	Staves and headings:	
Fire-bricks, 1,000	3	Pipe, 1 mille	5
Fish, 7 barrels	1	West India, 1 mille	4
Flour, 9 barrels	1	Barrel, 1 mille	2½
Gypsum and manganese, 6 barrels	1	Salt-barrel, 1 mille	1
Horses, 2	1	Saw-logs, standard, 1	½
Lard and tallow, 7 barrels or 22 kegs	1	Square timber, 50 cubic feet	1
Liquors and spirits, 215 gallons	1	Telegraph poles, 10, or 40 cubic feet	1
Liquors, all others, 215 gallons	1	Masts and spars, 40 cubic feet	1
Nuts, 9 barrels	1	Railroad ties, 16, or 50 cubic feet	1
Oysters, 6 barrels	1	All other woodenware or partly manufactured wood, 40 cubic feet, as per tariff	1
Pork, 7 barrels	1	Traverses, 40 cubic feet or 5 pieces	1
Salt, 7 barrels	1	Floats, 50 lineal feet	1
Seeds, 9 barrels	1		
Sheep, 20	1		

NOTE.—By the weights and measures act of 1873 the following articles are to be estimated by the cental of 100 pounds, viz: Barley, beans, charcoal, corn, oats, peas, potatoes, rye, salt, seeds, and wheat.

Saint Peter's Canal.

On each and every vessel passing through the said canal, 2 cents per ton on the vessel and 1 cent per ton on the freight, each way.

Bobcaygeon, Peterborough and Hastings Locks.

	Cents.		Cents.
For every lockage of saw-log or other cribs.	50	For every lockage of sawn lumber, per M feet	1
For every lockage of saw-logs on scows, per log	½	For cord-wood, shingle-bolts, or other merchandise, per cord	5
For every lockage of ties or cedar posts, per 100 pieces	25	For every lockage of ore, per ton	1

tes to be levied on vessels and property passing the several subdivisions of the canals.

Welland Canal.	Rate.	Welland Canal.	Rate.
rt Maitland, Dunnville, and Port ie. to Port Robinson or Allanburg, sing the lock, each way..... ppewa Cut, or any part thereof, to lle, Port Maitland, or Port Colborne unville to Port Colborne ..... orold to Saint Catharine's or Port sie..... tland, Dunnville, Colborne, or Port on to Marshville and intermediate ..... rshville or intermediate places to aitland, Dunnville, Port Colborne, rt Robinson ..... rt Robinson to Allanburg or Thor-	½ ½ ½ ½ ½ ½ ½ ½ ½	From Port Robinson to Saint Catharine's or Port Dalhousie ..... From Saint Catharine's to Port Dalhousie. From Dunnville to Maitland..... From Port Robinson through the lock and Chippewa Cut ..... From Port Colborne to Port Maitland ... From Chippewa Cut through lock to Port Robinson ..... From Colborne, Dunnville, Maitland, and Marshville to Thorold ..... From Colborne, Dunnville, Maitland, and Marshville to Saint Catharine's..... Through the Chippewa Cut only ..... Through the Port Robinson Lock only.....	½ ½ ½ ½ ½ ½ ½ ½ ½

LAWRENCE CANALS.—The navigation to be divided into four sections, viz, Cardinal, Cornwall, ois, and Lachine.
» be levied on all vessels and property in proportion to the number of sections passed

LY CANAL.—Vessels and property passing from Sorel to Chambly to pay one-third; from to Saint John's to pay two-thirds.
A CANALS.—The navigation to be divided into three sections, viz, Grenville, Carillon, and ne's. Tolls to be levied on all vessels and property in proportion to the number of sections rough.
CANAL.—The navigation of this canal is divided into three sections, "Ottawa," "Smith's id "Kingston Mills." Vessels and freight passing one section to be charged one-third; two two-thirds.
AL.—Any fraction of a ton freight to be charged one ton and portions of sections to be as a whole section on all the above canals. The passing of saw-logs or other lumber through e canals or sections thereof is to be at all times governed by the regulations for their man-

E DUES.—Vessels receiving or discharging freight at the premises of the Welland Railway Colborne or Dalhousie are to be free from harbor dues; but all other vessels discharging or cargo at Port Dalhousie, Port Colborne, or Port Maitland shall pay on every ton of freight ed or discharged 2 cents.

ncreased and increasing size of the vessels navigating the upper lakes has siderable extent impaired the efficiency of the Welland and Saint Lawrence especially as competitors of the Erie Canal. These Canadian Canals must be d and portions of the walls and banks entirely rebuilt or reconstructed, to e new conditions of lake navigation. When business is active the Saint Law- ute may obtain a good share of the grain-carrying trade under present con- but in the seasons of light shipments the Americans will endeavor to control tolls and low rates of transportation must tell in favor of the lakes and Erie oute.

ollowing summaries of dispatches which have appeared in the public journals e a good idea of the feeling, opinions, and conclusions arrived at relative to rgement of the Welland and Saint Lawrence Canals:

a, July 10, 1884.—The Canadian Government will withdraw the order reduc- al tolls at the end of the present season of navigation, and plans will be sub- o the chief engineer shortly for further enlargements of the canals by deep- e Welland and Saint Lawrence so as to permit the passage of vessels draw- eet. (On the same day towing charges were reduced 25 per cent. on the Wel- nal, in the endeavor to secure a larger portion of the grain-carrying trade than n to the lot of the Canadian water route this season.)

a, July 29, 1884.—The Canadian Government has become convinced that in the of Canadian trade the Welland Canal should be opened so as to give 14 feet r on the sills, and that this important work should be commenced at an early that it may be completed by the spring of 1886. Much work has been done t end in view. Ports Colborne and Dalhousie are now finished, so that vessels 14 feet can enter. The foundations of all the permanent structures of the e at the proper depth, and what is needed is in some places to raise the banks so rd the requisite depth of water. When finished, vessels carrying large cargoes through. This will decrease greatly the cost of transportation and make the hat it ought to be, so as to enable the country to compete with other canals nsport service for the grain trade of the West.

, *September* 12, 1884.—The commissioner appointed to investigate and report on means of dealing with the Canadian canal system has submitted a report to the inister of railways and canals. It is understood that the Government has

adopted this report and will act upon it. The report contains much interesting matter, is lengthy and exhaustive, and from statistics gives the opinions and other information obtained in New York, Montreal, Chicago, Buffalo, Baltimore, and other trade centers. The commissioner is of the opinion that for the conservation of the trade and commerce of Canada through its natural water-way an increased depth of water in the Welland Canal is an absolute necessity, so that vessels and propellers of 2,000 tons burden or cargoes will be enabled to make the passage to Montreal and discharge alongside of ocean vessels. [Nothing seems to be said about the Saint Lawrence canal. What is the use of enlarging the Welland and leaving the others as they are?] It is proposed that the enlarged canal system shall ultimately convert the Great Lakes, the river and gulf of Saint Lawrence into one vast inland navigation from Cape Race to Thunder Cape. He thinks the lighterage at Port Colborne too cumbersome and expensive for the present age. [What is his opinion of the barge system from Kingston to Montreal?]

Ottawa, September 14, 1884.—Mr. Robert E. Douglas, the commissioner appointed by the Dominion Government to investigate and report upon the best means of dealing with the Canadian canal system, has submitted a report, which it is understood the Government has adopted and will act upon. He thinks the success of the Saint Lawrence route depends upon increasing the depth of the water, and that unless the improvements of the Saint Lawrence water-way keep pace with the construction of the Canadian Pacific Railway and the settlement of the country, the trade of the Canadian Northwest will seek foreign channels eastward by Duluth, Buffalo, and New York, or southward via Saint Paul, Milwaukee, and Chicago. An appropriation for deepening the canal to 14 feet will probably be asked for in the next session of Parliament.

HISTORIC POINTS RELATIVE TO THE CONSTRUCTION OF THE GRAND TRUNK RAILWAY OF CANADA AND ITS PRINCIPAL FEEDERS.

1. Grand Trunk Railway and its connections.
2. Great Western branch and its connections.
3. Northern, and Hamilton and Northwestern.
4. Welland.
5. Canadian Pacific.
6. Intercolonial.

Grand Trunk Railway (Canada).

	Miles.
From Portland, Me., to Detroit, Mich	861.
From Niagara Falls, Ont., to Windsor, Ont	229.
From Fort Erie, Ont., to Glencoe, Ont	145.
Extensions and branches	1,123.
Total length December 31, 1883	2,358.

This road is divided into two divisions, viz, the Grand Trunk and the Great Western. The former operates over 1,533.50 miles of tracks and the latter over 825 miles.

The districts of the Grand Trunk division are as follows:

	Miles.
*Detroit: Port Huron, Mich., to Detroit, Mich	59.25
Toronto and Sarnia: Sarnia, Canada, to Toronto, Canada	168.50
Montreal and Toronto: Toronto, Canada, to Montreal, Canada	333.00
Montreal and Island Pond: Montreal, Canada, to Island Pond, Vt	144.00
Montreal extension to wharves at Montreal	2.00
*Island Pond and Portland: Island Pond, Vt., to Portland, Me	149.25
Champlain: Montreal, Canada, to Rouse's Point and province line	73.50
*Montreal and Champlain Junction: Brossean's, Canada, to Fort Covington, N. Y	62.25
*Buffalo and Goderich: Buffalo, N. Y., to Goderich, Canada	162.00
Quebec and Richmond: Richmond, Canada, to Quebec, Canada	89.75
Arthabaska branch: Arthabaska, Canada, to Three Rivers	35.25
*Lewiston and Auburn branch: Lewiston, Me., to Lewiston Junction, Me.	5.50
Kingston branch: Kingston, Canada, to wharves	2.25
Galt branch: Junction to Galt and Waterloo, Canada	14.50
London branch: London, Canada, to Saint Mary's, Canada	22.00
*Norway branch: South Paris, Me., to Norway, Me	1.50
*Georgian Bay and Lake Erie: Port Dover to Durham and Wiarton, Ont	171.50
*Michigan Air Line: Ridgway, Mich., to Pontiac, Mich	35.00
Sarnia extension	2.50
Total	1,533.50

*Those marked thus (*) are leased.

The districts of the Great Western division are as follows:

	Miles.
Main line: Niagara Falls to Windsor, Ontario	229.63
Loop line: Glencoe to Fort Erie	145.50
Hamilton to Toronto	38.50
Harrisburg to Guelph and Opur	528.98
Harrisburg to Brantford	8.00
Kokoma to Sarnia	.85
Wyoming to Petrolia	4.75
Clifton to Allanburg	8.32
Welland Junction to Merritton	14.83
Wellington, Grey and Bruce (leased)	101.75
Kincardine line: Palmerston to Kincardine (leased)	66.60
London and Port Stanley: London to Port Stanley (leased)	23.66
London, Huron and Bruce: Hyde Park to Wingham Junction (leased)	68.89
Brantford, Norfolk and Point Burwell: Brantford to Tilsonburg (leased)	34.74
Total	825.00

The Grand Trunk Railway Company was chartered in 1851; opened from Portland, Me., to Montreal in 1853, and from Richmond to Quebec in 1854. The division from Montreal to Toronto was completed in 1856, and that from Toronto to Sarnia in 1858. The line from Montreal south to the province line was brought into use in 1853. The eastern extension was opened from Chaudière Junction to Saint Thomas in 1855, to Saint Paschal in 1859, to the Rivière du Loup in 1860. In 1879 the extension to the Rivière du Loup (124.25 miles) was sold to the Colonial Government, and the transfer made in 1879.

In the same year (1879) the Grand Trunk Railway Company acquired, by purchase and construction, a line between Port Huron, Mich., and Chicago, Ill., about 330 miles in length. This line comprised the old Chicago and Lake Huron Railroad (including the Chicago and Northeastern) the Chicago and Southern. The whole line was opened February, 1880.

The company have also, by subsequent agreements, obtained control and possession of the Port Dover and Lake Huron, the Stratford and Huron, the Montreal and Champlain, the Michigan Air Line, the Grand Trunk, Georgian Bay and Lake Erie, and also the Montreal and Champlain Junction Railways.

The Welland Railway act of 1884 also authorizes the transfer of the Welland railway, 25 miles, to the Grand Trunk Railroad Company.

On January 1, 1884, the Grand Trunk Railroad Company leased the Midland Railway of Canada, and it has been operated since as a part of its system. This road runs from Port Hope, Ontario, to Midland, Ontario, 119 miles; its other branches and divisions added make a total mileage of 464 miles. It is the intention to make a through line of this road eventually from Toronto to Ottawa, with branches to Georgian Bay and the Canada Pacific Railroad.

The Great Western Company was chartered March, 1845, and the several additional lines as follows: Galt and Guelph, February, 1852; Hamilton and Toronto, November, 1852; the Sarnia, April, 1853; the Canada Air (Glencoe loop), December, 1869; the Allanburg branch, May, 1874. The main line was completed January, 1854; the Hamilton and Toronto, December, 1858; and the Sarnia, December 1858. The branch to Galt was opened August, 1854, and extended to Guelph September, 1857. The Air Line was opened in 1873, and the Allanburg branch, which connects it through the Welland Railway, with the Suspension Bridge, in 1875.

On August 12, 1882 the Grand Trunk Railway Company and the Great Western Railway Company were consolidated, under the name of the former, the united company assuming all the resources and liabilities of the two companies.

NOTE.—The Buffalo and Lake Huron Railway, from International Bridge, Canada, to Goderich, Canada, 162 miles, was opened June, 1858, and leased to the Grand Trunk Railway, in perpetuity, July, 1868.

Northern and Hamilton and Northwestern Railways.

	Miles.
From Port Dover, Ont., to Allandale Ont.	134.07
From Toronto, Ont., to Collingwood (Georgian Bay), Ont	94.96
Branches	152.89
Total length December 31, 1883	381.92

The Northern Railway was chartered as the Toronto, Sarnia and Lake Huron Railway in 1849, and took the name of the Northern in 1858. It was opened from Toronto to Collingwood in 1855. The Hamilton and Northwestern was chartered in 1871, and opened from Port Dover to Collingwood in 1879. These lines are now united or operated under a *joint working* agreement, dated June, 1879.

Welland Railway.

	Miles.
From Port Dalhousie, Lake Ontario, to Port Colborne, Ont., Lake Erie	25

Opened in 1859. In 1872 the Great Western Railway used the middle portion of about 14¼ miles. On the consolidation of the Grand Trunk and Great Western Railways a new arrangement was made, by which the entire road was transferred to the Grand Trunk Company.

This is the line of railway running parallel with the Welland Canal. Vessels unable to pass through the Welland Canal by reason of large cargoes decrease their tonnage by elevating a portion of the grain at the Port Colborne end of the road and receive it back at the Port Dalhousie end.

Canadian Pacific Railway.

The following is a synopsis of the latest published reports of this road:

	Miles.
Main line completed	2,157
Main line under construction	734
Total length	2,892
Ontario division	454
Ontario division, branches	132
Eastern division, branches	132
Western division, branches	294
Grand total length	3,956.

Incorporated February, 1881, with authorized capital of $100,000,000. The charter confers large powers on the company, such as the right of constructing branches along the entire length of line, of establishing lines of ships or steamers at its termini, and of constructing and working telegraph lines. The company is subsidized by the Dominion of Canada Government to the extent of $25,000,000 in money and 25,000,000 acres of land, of alternate sections of 640 acres each, within 24 miles of the road, on either side, from Winnipeg to the base of the mountains. On the main line, from Montreal to Callender, 345 miles, together with the Saint Lin, Saint Jerome, Saint Eustache, Aylmer, Perth, and Brockville branches, aggregating 98 miles (in all 443 miles), were acquired by purchase. Of the capital stock of the company $65,000,000 have been issued.

Since the close of 1883 the company has leased, in perpetuity, the following railways consolidated under the name of the Ontario and Quebec Railway Company: The Ontario and Quebec; the Credit Valley; the Toronto, Grey and Bruce, and the Atlantic and Northwestern. This line, now called the "Ontario division," is at present constructed from Smith's Falls, on the Eastern division of the Canadian Pacific, to Toronto, to Saint Thomas (where it connects with the Grand Trunk Railway), and to Owen Sound. At the latter place a connection has been formed with the Western section of the Canadian Pacific line at Port Arthur, by means of 3 Clyde-built steel steamships belonging to this company. The opening of this route gives the company a direct communication by means of its railway and steamers from Montreal to the summit of the Rocky Mountains.

The following are the details of the lines of road:

	Miles.
Main line:	
Montreal to Bannerman	484.7
Bannerman to Nepigon (under construction)	442.5
Nepigon to Stephen, the summit of the Rocky Mountains	1,459.1
Stephen to Savona's Ferry, Kamlooks Lake (under construction)	292.0
Savona's Ferry to Port Moody	214.0
Total	2,892.3
Ontario division:	
Smith's Falls to Toronto Junction	211.0
Toronto to Saint Thomas	121.0
Toronto to Owen Sound	122.0
Total	454.0
Ontario division (branches):	
Orangeville: Streetsville to Orangeville	35.0

ra : Church Falls to Elora	27.5
swater : Orangeville to Teeswater	70.0
Total	132.5
Eastern division (branches) :	
mer : Hull to Aylmer	7.5
it Jerome : Saint Therese to Saint Jerome	13.6
it Lin : Saint Lin Junction to Saint Lin	13.0
it Eustache : Saint Therese to Saint Eustache	8.0
ekville : Carleton Junction to Brockville	45.5
ina : Sudbury to Algoma Mills	96.0
Total	183.6
Western division (branches):	
erson : Emerson to Winnipeg Junction	66.5
st Selkirk : Winnipeg to West Selkirk	22.0
newall : Air Line Junction to Stonewall	18.3
bina : Winnipeg to Manitou	102.4
thwestern Colonial Railway : Winnipeg to Maryland	51.0
tna : Rosenfeld to Gretna	13.9
erson and West Lynn : Emerson to West Lynn	20.3
Total	294.4

The gross earnings for the years 1883 were $5,473,897.64, against $3,326,920.41 in 2.

The cost of the road and equipments to December 31, 1883, was $77,741,526.26. The al assests December 31, 1883, were $120,330,493.57.

The work of construction is to be completed by the end of May, 1886.

The company proposes to extend its line eastward to Halifax or Saint John, instead Portland or Boston, the existing lines to be used from Montreal to West Farnham; m thence to Sherbrooke a new line will be built. From Sherbrooke to Maine State e the International is completed; from thence to Vanceborough the Maine Central ll be used, and the New Brunswick Railway from Vanceborough to Saint John. To ch Halifax the proposed line leaves the New Brunswick Railway at Macadam nction, and runs through Fredericton to the Intercolonial near Moncton, requiring e building of about 100 miles of new road.

Intercolonial Railway.

	Miles.
om Point Levi (Quebec) to Halifax, Nova Scotia	678.0
anches	8.5
tensions:	
Saint Charles to Hadlow, Quebec	23.0
Dalhousie Junction	6.0
Moncton to Saint John, New Brunswick	89.0
Painsec to Point du Chêne, New Brunswick	11.0
Truro to Pictou Landing, Nova Scotia	51.0
New Glasgow to Port Mulgrave, Nova Scotia	80.0
Total	946.5

Owned and operated by the Government of Canada. The section from Halifax to uro opened December, 1858; Truro to Pictou Landing, June, 1865; Moncton to int du Chêne, 1857; Moncton to Saint John, August, 1860; Painsec to Truro, 1872; ncton to Campbellton, 1875; Campbellton to Saint Flavie, June, 1876; Saint avie to Rivière du Loup, 1874. The section from Rivière du Loup to Hadlow was rchased from the Grand Trunk Railway in August, 1879. In January, 1884, the e from New Glasgow to Port Mulgrave, on the Strait of Canso, was purchased from provincial government of Nova Scotia. On July 1, 1884, a new loop line was ened from Saint Charles to Point Levi, on the harbor of Quebec.

TRANSPORTATION STATISTICS.

The following statements include (1) the receipts and shipments of flour and grain, Montreal for a series of years; (2) exports from Canada, of flour and wheat, re-pts of flour and grain at Montreal by Grand Trunk Railway and the Lachine nal; (3) opening and closing of navigation at Montreal and Kingston; (4) num-r and tonnage of vessels arriving from sea at Montreal; (5) rates of freight by water m Chicago to Montreal; (6) average rates of freight, Montreal to Liverpool; (7) lroad freights Chicago to Montreal; (8) lake shipments 1883 from Toledo to Mon-al and Sarnia, with freight rates; (9) lake freights on wheat 1883, Toledo to

Buffalo; (10) railroad freights on grain 1883, to Baltimore and New York; (11) lake shipments 1883 from Detroit to Kingston and Montreal, with freight rates; (12) lake shipments 1883 from Milwaukee to Kingston and Montreal, with freight rates; (13) shipments to Canada in 1883, originating in Chicago; (14) value of exports by lake from Chicago to Canada from 1877 to 1883, inclusive; (15) lake freights, Chicago to Buffalo, for wheat and corn, from 1857 to 1883, inclusive; (16) wheat movement, Duluth, 1883–'84.

Flour and grain received at and shipped from Montreal for thirty years (including grain, wheat, corn, peas, oats, and barley).

RECEIPTS OF FLOUR.

Years.	Quantity.	Years.	Quantity.	Years.	Quantity.
	Barrels.		*Barrels.*		*Barrels.*
1854	484,684	1864	858,795	1874	1,675,[illegible]
1855	433,011	1865	782,216	1875	1,023,[illegible]
1856	589,757	1866	704,376	1876	915,[illegible]
1857	573,445	1867	738,518	1877	823,[illegible]
1858	669,064	1868	790,311	1878	916,[illegible]
1859	575,810	1869	975,295	1879	771,[illegible]
1860	577,196	1870	1,061,273	1880	735,[illegible]
1861	1,095,339	1871	951,760	1881	826,1[illegible]
1862	1,174,602	1872	921,973	1882	866,0[illegible]
1863	1,193,286	1873	1,130,666	1883	1,012,7[illegible]

SHIPMENTS OF FLOUR.

Years.	Quantity.	Years.	Quantity.	Years.	Quantity.
	Barrels.		*Barrels.*		*Barrels.*
1854	97,724	1864	858,071	1874	830,2[illegible]
1855	53,383	1865	687,001	1875	840,6[illegible]
1856	196,731	1866	595,198	1876	842,8[illegible]
1857	239,301	1867	589,021	1877	749,2[illegible]
1858	197,742	1868	683,612	1878	716,7[illegible]
1859	105,976	1869	966,057	1879	725,1[illegible]
1860	277,567	1870	975,513	1880	739,0[illegible]
1861	605,042	1871	908,844	1881	632,8[illegible]
1862	597,477	1872	832,931	1882	775,8[illegible]
1863	616,021	1873	863,569	1883	776,2[illegible]

RECEIPTS OF GRAIN.

Years.	Wheat.	Corn.	Peas.	Oats.	Barley.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*
1854	431,785	651,149	10,098	11,197	21,457
1855	634,317	622,208	38,956	49,728	17,938
1856	1,340,705	437,154	52,972	43,063	24,194
1857	1,667,724	330,084	16,773	15,007	19,410
1858	1,774,464	105,087	177,908	113,566	23,881
1859	635,424	71,430	113,186	63,093	27,925
1860	2,622,602	138,214	776,129	37,637	27,483
1861	7,738,084	1,555,477	1,409,879	122,399	132,749
1862	8,534,172	2,661,261	534,679	106,792	236,938
1863	5,509,134	862,534	668,265	403,972	307,261
1864	4,194,217	158,564	357,207	232,616	371,055
1865	2,648,674	935,421	436,751	163,694	317,688
1866	773,208	1,117,208	1,036,315	2,122,305	336,951
1867	2,939,297	891,605	1,302,306	309,268	413,320
1868	2,426,869	1,086,152	520,395	215,075	267,416
1869	7,462,033	141,982	550,984	84,086	60,238
1870	6,505,315	83,656	892,969	172,499	40,465
1871	8,224,805	3,171,757	292,308	122,946	82,258
1872	4,665,314	7,656,440	652,649	211,684	129,064
1873	9,788,730	3,554,514	455,799	163,069	194,872
1874	7,692,284	2,803,284	1,144,739	283,004	175,652
1875	8,615,238	1,804,016	1,157,040	258,098	181,935
1876	6,388,130	3,932,031	1,030,043	2,616,174	270,677
1877	7,218,092	4,617,015	810,901	323,075	1,230,488
1878	7,390,095	6,117,326	1,611,433	723,103	429,410
1879	11,313,634	4,389,291	2,026,379	490,541	365,789
1880	9,637,124	7,772,549	2,617,656	1,191,531	357,156
1881	7,599,825	3,817,006	3,015,544	1,447,813	284,212
1882	8,273,678	702,879	2,099,607	926,996	247,533
1883	6,080,911	4,866,151	1,635,398	495,742	239,189

Flour and grain received at and shipped from Montreal, &c.—Continued.

SHIPMENTS OF GRAIN.

Years.	Wheat.	Corn.	Peas.	Oats.	Barley.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*
1854	122,636	146,748	47,264	.....	.....
1855	45,707	28,629	105,215	9,366	1,799
1856	774,167	158,236	218,116	8,643	2,075
1857	859,912	28,631	186,142	120	4
1858	669,241	14,947	423,018	32,160	300
1859	58,005	3,015	344,189	12,600	29,068
1860	1,645,209	24,387	1,298,845	206,732	252
1861	5,584,727	1,477,114	1,529,136	1,040,085	(*)
1862	6,500,796	1,774,546	711,192	979,639	(*)
1863	3,741,146	638,281	745,414	3,086,835	709,239
1864	2,406,531	21,974	499,629	3,437,810	854,770
1865	787,938	734,849	681,910	3,251,566	1,010,392
1866	83,278	1,870,223	1,141,733	3,383,536	427,332
1867	1,576,528	681,708	1,761,960	1,425,950	901,037
1868	1,081,958	682,497	663,545	903,024	451,366
1869	5,595,332	108,018	576,984	330,738	163,372
1870	5,973,048	6,043	1,747,723	635,830	250,609
1871	7,680,834	2,870,998	796,143	86,818	57,601
1872	3,818,450	7,546,390	1,175,026	436,446	118,496
1873	8,225,649	3,520,918	917,761	331,439	153,362
1874	7,556,566	2,561,375	1,763,306	261,377	45,426
1875	7,117,159	1,724,220	1,544,665	343,565	176,950
1876	5,097,694	3,834,602	1,362,731	3,022,874	201,796
1877	5,848,363	4,226,296	1,127,245	400,142	1,091,473
1878	6,802,822	5,664,835	2,226,792	957,376	5,846
1879	10,461,221	4,052,307	2,621,592	645,485	8,375
1880	9,084,266	7,622,161	3,081,674	1,853,829	293,023
1881	6,554,622	3,359,084	3,133,203	1,211,221	133,824
1882	6,913,290	672,859	2,202,674	545,962	128,451
1883	5,008,167	4,530,731	1,666,334	155,431	142,354

* Incomplete.

Exports from Canada of flour and wheat in the years specified.

[Fiscal year ending June 30.]

Years.	Produce of Canada.			Not produce of Canada.		
	Wheat.	Flour.	Total.	Wheat.	Flour.	Total.
	Bushels.	*Barrels.*	*Bushels.*	*Bushels.*	*Barrels.*	*Bushels.*
1872–'73	4,379,741	474,202	6,750,751	2,025,932	9,511	2,073,487
1873–'74	6,581,217	540,317	9,282,802	5,429,842	14,025	5,499,962
1874–'75	4,383,022	302,783	5,896,937	2,670,522	6,198	2,701,512
1875–'76	6,070,393	415,504	8,145,913	3,177,997	4,432	3,200,157
1876–'77	2,393,155	268,665	3,736,180	1,165,940	7,834	1,205,110
1877–'78	4,393,535	476,431	6,765,690	4,115,708	2,814	4,129,778
1878–'79	6,610,724	574,947	9,485,459	3,156,821	5,829	3,185,976
1879–'80	5,090,505	544,591	7,813,460	7,078,988	16,893	7,163,453
1880–'81	2,523,673	439,728	4,722,313	6,568,606	61,727	6,877,231
1881–'82	3,845,035	469,739	6,193,730	2,588,498	38,381	2,780,403
1882–'83	5,867,458	489,046	8,312,688	4,866,077	37,294	5,052,547

NOTE.—Flour reduced to its equivalent wheat in "total bushels."

The receipts of grain and flour (reduced to its equivalent wheat) at Montreal per Grand Trunk Railway and the Lachine Canal from 1854 to 1867 inclusive were as follows (1854 to 1860 no returns obtainable):

	Bushels.
1861	13,770,544
1862	18,237,791
1863	13,770,544
1864	9,675,058
1865	8,541,582
1866	10,360,001
1867	10,796,576

It will be seen from the above figures that no returns could be obtained for the years 1854 to 1860 inclusive. From 1861 to 1867, inclusive, the receipts were not divided. The next table shows the receipts from 1868 to 1883, inclusive, and divided into rail and water divisions.

The receipts of grain and flour (reduced to its equivalent, wheat) at Montreal per Grand Trunk Railway and the Lachine Canal from 1868 to 1883, inclusive, were as follows:

Years.	Grand Trunk Railway	Lachine Canal.	Years	Grand Trunk Railway.	Lachine Canal.
	Bushels.	*Bushels.*		*Bushels.*	*Bushels.*
1868	3,026,083	5,544,827	1876	6,347,616	12,720,
1869	3,350,995	9,753,754	1877	5,083,883	13,650,
1870	2,774,962	9,954,000	1878	7,627,891	14,250,
1871	3,759,706	12,520,443	1879	5,813,330	17,160,
1872	3,825,872	13,8[illegible]3,381	1880	5,524,651	19,280,
1873	4,326,730	15,573,816	1881	7,588,840	12,431,
1874	4,855,387	12,820,967	1882	6,289,061	10,005,
1875	5,761,106	1,654,284	1883	6,442,195	10,841,

Opening and closing of navigation at Montreal and Kingston, from 1854 to 1883, both years inclusive.

Years.	Montreal.*		Kingston.	
	Opened.	Closed.	Opened.	Closed.
1854	April 25	December 6	April 10	January 13, 1855.
1855	April 28	December 12	April 17	December 31, 185[illegible]
1856	April 24	December 3	April 8	December 31, 185[illegible]
1857	April 18	December 13	April 2	February 2, 1858.
1858	April 9	December 12	April 26	January 8, 1859.
1859	April 4	December 11	April 15	December 25, 185[illegible]
1860	April 10	December 7	April 12	January 10, 1861.
1861	April 24	December 22	April 8	January 4, 1862.
1862	April 23	December 7	April 14	January 17, 1863.
1863	April 25	December 12	April 16	January 1, 1864.
1864	April 13	December 11	April 5	January 4, 1865.
1865	April 10	December 16	March 28	January 5, 1866.
1866	April 19	December 15	April 11	January 5, 1867.
1867	April 22	December 6	April 8	December 18.
1868	April 17	December 9	March 31	December 24.
1869	April 25	December 6	April 17	January 8, 1870.
1870	April 18	December 18	April 13	December 31.
1871	April 8	December 1	March 16	December 25.
1872	May 1	December 8	April 22	December 21.
1873	April 25	November 26	April 24	January 14, 1874.
1874	April 25	December 13	March 28	January 5, 1875.
1875	May 3	November 29	April 19	December 22.
1876	April 27	December 10	April 8	December 20.
1877	April 17	January 2, 1878	April 9	January 8, 1878.
1878	March 30	December 23	March 11	January 2, 1879.
1879	April 24	December 19	April 21	December 28.
1880	April 17	December 3	March 23	December 21.
1881	April 21	January 2, 1882	April 12	January 12, 1882.
1882	April 11	December 9	March 7	
1883	April 27	December 16		

* Average navigation, two hundred and thirty-five days.

and tonnage of vessels arriving from sea at the port of Montreal from 1854 to 1883, both years inclusive.

rs.	No.	Gross tonnage.	Years.	No.	Gross tonnage.	Years.	No.	Gross tonnage.
.....	258	70,910	1864.....	378	161,901	1874	384	306,782
.....	197	48,154	1865.....	358	152,943	1875	354	297,362
.....	247	71,321	1866.....	516	205,775	1876	337	285,609
.....	227	67,740	1867.....	464	199,053	1877	303	279,197
.....	225	78,809	1868.....	253	160,553	1878	325	309,261
.....	230	94,660	1869.....	261	168,824	1879	300	349,712
.....	259	121,559	1870.....	340	228,121	1880	374	427,057
.....	574	261,793	1871.....	346	247,313	1881	400	484,028
.....	571	265,243	1872.....	435	311,567	1882	347	373,412
.....	504	209,242	1873.....	422	307,453	1883	335	489,741

llowing statement shows the average freight on a bushel of wheat from Chi- Montreal, by water, via lakes and Kingston and canals, during the years :

Rates of freight from Chicago to Montreal on wheat, per bushel.

1851 to 1860 no records were kept as far as can be ascertained in Montreal or Chicago.]

s.	Cents.	Years.	Cents.	Years.	Cents.	Years.	Cents.
.....	20.37	1867	17.50	1873.....	18.50	1879	8.50
.....	26.00	1868	17.50	1874.....	12.50	1880	11.75
.....	16.00	1869	16.00	1875.....	11.00	1881	9.70
.....	18.50	1870	16.00	1876.....	10.00	1882	7.75
.....	18.50	1871	14.50	1877.....	10.00	1883	8.50
.....	18.50	1872	21.50	1878.....	8.50		

—Including tolls, transfer, and towing charges on canals.
—At Kingston the grain is transferred into barges; the standard size contains 18,000 to hels of wheat.

l, the cost of freight on a barrel of flour from Chicago to Montreal (by the ood route) was: Month of October, by rail, $1.20; by water, $1.10; month nber, by rail, $1.40.

ates of freight on grain, per 480 pounds, from Montreal to Liverpool, for a series of years.

[From 1851 to 1860 no records kept.]

	Sail.	Steam.	Years.	Sail.	Steam.	Years.	Sail.	Steam.
	s. d.	s. d.		s. d.	s. d.		s. d.	s. d.
.....	7 10	.....	1869	6 2	6 5½	1877	5 8½	5 8½
.....	8 7	10 4	1870	5 0	5 6	1878	5 2½	5 2½
.....	5 7½	6 10	1871	6 5	7 1½	1879	4 4½	5 0½
.....	5 8½	5 10	1872	6 4	6 6½	1880	4 5½	4 5½
.....	4 0½	4 10	1873	8 10	9 7	1881	2 8½	2 8½
.....	4 8	5 10½	1874	5 3	5 10½	1882	3 0½	3 0½
.....	6 2	7 5	1875	5 11	6 0	1883	None.	2 8½
....	4 10	5 8½	1876	5 5	5 5			

Rail freight rates per 100 pounds, Chicago to Montreal.

0 to 1860 no rail transportation through Canada. From 1861 to 1879 no records kept appar- l cannot find any person who was acquainted with the going rates at time of writing this.]

Years.	Wheat.	Corn.
	Cents.	*Cents.*
.....	20½	20½
.....	26½	26½

Lake shipments from Toledo, 1883.

Cereals.	To Montreal via Kingston.	To Sarnia.
	Bushels.	*Bushels.*
Wheat	553, 296	12, 000
Corn	710, 090	59, 673
Oats	2, 000	2, 000
Total	1, 265, 386	73, 673

Freight per bushel.—September 1 to November 28, to Kingston, 5 cents; September 1 to September 15, to Montreal, 7½ cents; September 17 to November 28, to Montreal, 7½ cents.

Freights on wheat from Toledo to Buffalo, by lake, 1883.

Date.	Rate.	Date.	Rate.
	Cents.		*Cents.*
April 27 to May 11	2	August 8 to August 28	2½
May 12 to June 1	1½	August 29 to September 16	2½
June 2 to June 8	2	September 17 to September 27	3
June 9 to June 17	1¾	September 28 to October 9	2½
June 18 to June 28	2	October 10 to November 15	2½
June 29 to August 7	1¾	November 16 to November 28	3

Railroad freights per 100 pounds grain, Toledo.

Date.	To Baltimore.	To New York.
	Cents.	*Cents.*
January 1 to April 17	19½	22½
April 18 to November 21	16½	19½
November 23 to December 31	20½	23½

Lake shipments from Detroit to Kingston and Montreal, 1883.—Wheat, 375,460 bushels; corn, 71,064 bushels, also 193,741 bushels wheat to other points not specified.

Freight per bushel on wheat.—To Kingston: September 1, 5 cents; October 15, 5½ cents; November 15, 5½ cents. To Montreal: July 1, 6½ cents; August 1, 6½ cents; August 15, 7½ cents; September 15, 7½ cents; October 1, 6½ cents; October 15, 7½ cents; November 1, 7½ cents; November 15, 8 cents.

Lake shipments from Milwaukee to Kingston and Montreal, 1883.

To—	Wheat.	Corn.
	Bushels.	*Bushels.*
Kingston	270, 250	258, 154
Montreal	84, 900	18, 000
Total	355, 150	276, 154

Freight charges (per bushel) to Kingston.

Wheat.—June 11 to July 19, 4½ cents; August 3, 5 cents; August 10 to 17, 6½ cents; August 20 and 25, 7 cents; September 12, 7½ cents.

Corn.—May 7 and 8, 6 cents; June 8 and 9, 4 cents; June 11, 4½ cents; July 7 to 21, 4½ cents; July 28 and August 1, 5 cents; August 9, 6½ cents; September 5, 7½ cents.

Wheat to Montreal, shipped on private terms, but averaged 2½ cents over Kingston rates. Dates when shipped July 7 and 20, August 11 and September 24.

Corn to Montreal, 2½ above Kingston rate. Only one cargo taken, date not reported.

Shipments to Canada originating in Chicago in 1883.

To—	Flour.	Wheat.	Corn.	Oats.	Rye.
	Barrels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*
Montreal	2,668	340,183	767,629	.....	.....
Kingston	.....	483,137	1,846,155	.....	18,500
Other points	1,055	49,448	1,238,532	44,789	.....
Total	3,723	872,768	3,852,316	44,789	18,500

Value of exports by lake from Chicago to Canada (including flour, grain, beef, pork, lard, hides, broom corn, seeds, hard wood, lumber, &c.)

1877	$4,399,675
1878	3,206,261
1879	2,962,260
1880	3,875,279
1881	2,883,238
1882	3,973,834
1883	3,193,850

Lake freights, Chicago to Buffalo, average rate on wheat and corn per bushel, from 1857 to 1883, *both years inclusive.*

Years.	Wheat, bushel 60 pounds.	Corn, bushel 56 pounds.	Years.	Wheat, bushel 60 pounds.	Corn, bushel 56 pounds.	Years.	Wheat, bushel 60 pounds.	Corn, bushel 56 pounds.
	Cents.	*Cents.*		*Cents.*	*Cents.*		*Cents.*	*Cents.*
1857	9.89	8.61	1866	12.34	11.41	1875	3.42	3.08
1858	3.76	3.25	1867	6.67	5.43	1876	3.11	2.60
1859	5.08	4.60	1868	7.14	6.05	1877	3.57	3.23
1860	9.89	8.92	1869	6.81	6.27	1878	3.17	2.78
1861	11.53	10.56	1870	5.88	5.43	1879	4.72	4.28
1862	10.49	9.60	1871	7.62	7.06	1880	5.64	5.15
1863	7.51	6.56	1872	11.46	10.54	1881	3.40	2.92
1864	9.58	8.94	1873	7.62	7.20	1882	2.50	2.00
1865	9.78	9.07	1874	4.03	3.67	1883	3.50	3.00

Wheat movement at Duluth, Minn.

From the following statement it appears that about one-seventh of the lake exports of wheat from Duluth, Minn., of the crop of 1883, were shipped to Canadian ports:

	Bushels of wheat.
Shipped from Duluth from September 6, 1883, to September 14, 1884	6,930,988
To Buffalo for home use and interior trade	3,745,486
To Buffalo for Eastern markets	1,883,857
Total	5,629,363
To Canadian ports	1,017,125
To Erie, Toledo, Milwaukee, and Detroit	284,500
Total	6,930,988

With regard to the cost of carriage now and twenty-three years ago, a writer in a Western newspaper (August, 1884) says: "Attention has been widely called of late to the surprising reduction in the cost of transportation between America and England. Mr. Trollope's book on America gave in 1861 the expenses attached to the transportation of a bushel of wheat from Chicago to Liverpool as 69 cents. A similar quantity of wheat, we are told, has been carried between the same cities for 15 cents, and this has beyond a question been done at a profit, for neither railroads nor steamship lines are in the habit of carrying freight at a loss. Decrease in the actual ex-

penses of transportation should be credited with a small part of the difference, sharper competition between the great transportation routes with still another share of this reduction, while the improvements in the great lake routes and the abolition of the Erie Canal tolls have had much to do with the reductions. But for the reduced charges on grain between the West and Europe the farmers of the West would be effectually barred out of the markets of Europe."

The following statement shows the imports of barley (in bushels) from Canada into the United States for a series of years:

Customs districts.	1883–'84.	1882–'83.	1881–'82.	1880–'81.	1879–'80.	1878–'79.	1877–'78.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*
Chicago, Ill	6,984	183,596	347,798	79,155	45,900	.....	101,672
Milwaukee, Wis	30,758	113,990	81,885	129,236	.....	40,622	.....
Minnesota, Minn	2,707	159	91	78	107	112	186
Huron, Mich	256,986	859,902	1,456,865	608,579	308,542	267,880	209,223
Detroit, Mich	209,852	429,357	1,207,486	190,850	64,262	52,836	57,221
Miami, Ohio	117,582	.....	52,986	56,935	46,606	.....	32,172
Sandusky, Ohio	.....	.....	.....	.....	.....	.....	.....
Cuyahoga, Ohio	1,200	85,584	138,621	47,752	16,714	17,797	137,467
Erie, Pa	27,076	.....	143,310	121,373	.....	39,638	108,678
Buffalo Creek, N. Y	1,854,324	2,104,722	1,997,008	1,795,205	1,252,854	1,135,982	1,079,349
Niagara, N. Y	787,046	355,789	629,486	509,195	434,228	317,381	644,889
Genesee, N. Y	716,000	363,719	281,483	197,458	11,353	34,246	17,959
Oswego, N. Y	3,330,586	4,491,288	4,449,401	4,537,450	4,218,471	3,111,871	4,099,482
Cape Vincent, N. Y	98,730	74,903	100,415	113,302	58,514	21,189	230
Oswegatchie, N. Y	517,264	305,942	245,075	181,828	72,923	174	62,641
Champlain, N. Y	518,107	468,628	900,238	742,922	367,903	180,928	116,889
Vermont, Vt	118,668	183,516	115,776	148,842	198,128	88,136	62,411
All other districts	2,252	(*)	(*)	(*)	(*)	(*)	(*)
Total	8,596,122	10,021,095	12,147,924	9,460,155	7,096,505	5,308,792	6,720,430

Customs districts.	1876–'77.	1875–'76.	1874–'75.	1873–'74.	1872–'73.	1871–'72.	1870–'71.
Chicago, Ill	153,720	292,617	86,403	.....	.....	.....	19,785
Milwaukee, Wis	25,500	67,978	.....	.....	.....	.....	.....
Minnesota, Minn	64	.....	.....	.....	63	246	343
Huron, Mich	949,622	1,149,306	208,692	26,457	32,346	70,840	9,585
Detroit, Mich	268,825	562,214	129,962	31,453	39,672	63,987	37,979
Miami, Ohio	91,722	213,568	153,383	50,461	5,128	42,889	2,255
Sandusky, Ohio	.....	.....	.....	5,773	.....	5,260	16,925
Cuyahoga, Ohio	172,970	423,880	173,919	67,114	29,499	133,910	142,887
Erie, Pa	226,743	505,447	201,578	148,187	117,717	144,746	225,737
Buffalo Creek, N. Y	887,994	1,744,511	715,931	340,187	323,045	741,386	476,779
Niagara, N. Y	509,049	908,824	613,754	530,864	397,503	658,343	183,799
Genesee, N. Y	61,446	149,397	73,895	48,428	37,866	81,278	70,295
Oswego, N. Y	3,024,599	3,726,424	2,767,306	2,106,560	2,821,787	3,219,122	3,171,314
Cape Vincent, N. Y	2,415	63,420	18,910	50,162	52,129	10,123	.....
Oswegatchie, N. Y	21,630	120,409	205,289	57,618	235,765	145,379	174,812
Champlain, N. Y	181,654	205,000	195,432	136,091	105,071	104,944	251,206
Vermont, Vt	96,425	129,546	42,505	82,596	11,791	68,493	11,768
All other districts	(*)	(*)	(*)	(*)	(*)	(*)	(*)
Total	6,674,388	10,262,541	5,586,959	3,681,951	4,210,382	5,490,946	4,796,423

* No report.

"The only ports in the Oswego customs districts that import barley are Oswego, Fair Haven, and Sodus Point. The imports at the port of Oswego during the crop year of 1883–'84, were 3,147,393 bushels; at Fair Haven, 109,002 bushels; at Sodus Point, 74,191 bushels. Crop year of 1882–'83, Oswego, 4,245,902 bushels; Fair Haven, 202,053 bushels; Sodus Point, 43,333 bushels. Crop year of 1881–'82, Oswego, 4,435,401 bushels; Fair Haven, 14,000 bushels. Crop year 1880–'81, Oswego, 4,348,137 bushels; Fair Haven, 189,313 bushels. Crop year 1879–'80, Oswego, 3,972,389 bushels; Fair Haven, 246,082 bushels. Crop year 1878–'79, Oswego, 2,961,874 bushels; Fair Haven, 149,997 bushels. Crop year 1877–'78, Oswego, 3,972,736 bushels; Fair Haven, 126,756 bushels. Previous to 1877 there were no imports of barley at Fair Haven; the figures antecedent to this date in the above, therefore, represent the imports at Oswego.

"The total imports of barley into the United States from Canada during the last fourteen crop years aggregate 103,054,618 bushels.

"In the annexed table we have separated the above imports showing the quantities shipped eastward and westward—the division being points of imports above

western shipments, and Erie and all ports below for eastern shipments. A ·able portion of the barley imported at Buffalo was shipped east in malt:

Crop years.	Shipped eastward.	Shipped westward.	Total.
	Bushels.	*Bushels.*	*Bushels.*
	7, 970, 053	626, 069	8, 596, 122
	8, 348, 507	1, 672, 588	10, 021, 095
	8, 862, 192	3, 285, 732	12, 147, 924
	8, 347, 570	1, 112, 585	9, 460, 155
	6, 614, 374	482, 131	7, 096, 505
	4, 929, 545	379, 247	5, 308, 792
	6, 191, 709	528, 721	6, 720, 430
	5, 011, 965	1, 662, 423	6, 674, 388
	7, 552, 978	2, 709, 563	10, 262, 541
	4, 834, 600	752, 359	5, 586, 959
	3, 500, 693	181, 258	3, 681, 951
	4, 102, 674	107, 708	4, 210, 382
	5, 173, 814	317, 132	5, 490, 946
	4, 566, 709	229, 719	4, 796, 428

the total quantity designed for eastern shipment of the crop of 1883–'84, Os- ·ceived 39.49 per cent.; 1882–'83, 50.85 per cent.; 1881–'82, 50.05 per cent.; , 52.09 per cent.; 1879–'80, 60.06 per cent.; 1878–'79, 60.08 per cent.; 1877–'78, r cent; 1876–'77, 60.34 per cent.; 1875–'76, 49.33 per cent.; 1874–'75, 57.22 per 1873–'74, 60.17 per cent.; 1872–'73. 68.77 per cent.; 1871–'72, 62.22 per cent.; , 69.46 per cent.

following table will show the quantity of barley imported at the port of Oswego the last fourteen crop years, with the total imports at other ports combined:

Crop years.	Imports at Oswego.	Imports at other ports.	Total.
	Bushels.	*Bushels.*	*Bushels.*
	3, 147, 393	5, 448, 729	8, 596, 122
	4, 245, 902	5, 775, 193	10, 021, 095
	4, 435, 401	7, 712, 523	12, 147, 924
	4, 348, 137	5, 112, 018	9, 460, 155
	3, 972, 389	3, 124, 116	7, 096, 505
	2, 961, 874	2, 346, 918	5, 308, 792
	3, 972, 736	2, 747, 694	6, 720, 430
	3, 024, 599	3, 649, 789	6, 674, 388
	3, 726, 424	6, 536, 117	10, 262, 541
	2, 767, 306	2, 819, 653	5, 586, 959
	2, 106, 560	1, 575, 391	3, 681, 951
	2, 821, 787	1, 388, 595	4, 210, 382
	3, 219, 122	2, 271, 824	5, 490, 946
	3, 171, 314	1, 625, 114	4, 796, 428

the total imports of Canada barley into the United States of the crop of , Oswego received 36.61 per cent.; crop year 1882–'83, 44.82 per cent.; crop year :, 36.51 per cent.; crop year 1880–'81, 47.02 per cent.; 1879–'80, 55.99 per cent.;), 55.79 per cent.; 1877–'78, 58.01 per cent.; 1876–'77, 45.32 per cent.; 1875–'76, r cent.; 1874–'75, 49.53 per cent.; 1873–'74, 57.21 per cent.; 1872–'73, 67.02 per 1871–'72, 58.62. per cent; 1870–'71, 66.12 per cent.

ıt showing the total imports of barley malt in bushels into the United States from Canada during the last thirteen fiscal years ended June 30.

stoms districts.	1883–'84.	1882–'83.	1881–'82.	1880–'81.	1879–'80.	1878–'79.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*
fich		12, 771	16, 655	14, 272	48, 847	18, 739
Mich	8, 295	9, 500	51, 146	5, 966	40, 047	20, 051
a, Ohio					180	
reek, N. Y	36, 204	47, 294	51, 053	37, 577	64, 978	11, 329
N. Y	110, 832	569, 796	787, 872	535, 539	759, 143	425, 390
N. Y		39, 878				
N. Y		321, 978	167, 765	10, 126	65, 399	28, 457
icent, N. Y		4, 342	31, 962	13, 488	25, 471	3, 886
hie, N. Y			3, 046	17, 854	12, 262	4, 625
in, N. Y		10, 425	351		4, 418	
, Vt		57, 391	18, 829	9, 098	2, 666	5, 429
districts	332	(*)	(*)	(*)	(*)	(*)
tal	155, 670	1, 073, 375	1, 128, 689	643, 920	1, 023, 411	517, 915

Statement showing the total imports of barley malt in bushels, &c.—Conlinued.

Customs districts.	1877–'78.	1876–'77.	1865–'76.	1874–'75.	1873–'74.	1872–'73.	1871–'72.
Huron, Mich	.....	41,475	1,333	.....	1,096	1,170	2,466
Detroit, Mich	5,758	27,144	8,790	15,901	5,171	.....	.....
Buffalo Creek, N. Y	124,186	40,550	46,151	4,888	5,496	5,520	9,033
Niagara, N. Y	392,438	162,700	190,783	71,567	105,182	150,120	93,979
Oswego, N. Y	19,963	10,356	10,813	85,973	60,316	98,827	86,789
Cape Vincent, N. Y	650	647	600	.....	.....	.....	.....
Oswegatchie, N. Y	.....	14,451	4,825	.....	.....	9,900	10,997
Vermont, Vt	8,610	16,546	16,769	9,605	7,630	5,126	32,938
All other districts	(*)	(*)	(*)	(*)	(*)	(*)	(*)
Total	551,605	314,139	280,064	187,934	184,891	270,663	230,139

* No report.

"The imports during the thirteen fiscal years aggregate 6,512,415 bushels, with a value of $5,074,476 at the ports of exportation in Canada. The imports into the Oswego district during the past six years comprise receipts at Oswego, Fair Haven, and Sodus Point. The first receipts at Fair Haven were in 1877, and at Sodus Point in 1883."

(The above figures prepared by Mr. H. C. Stillman, Oswego, N. Y.)

SHIPMENTS OF CANADA CATTLE.

The shipments of Canada cattle to the United States have been very large this year (September 10, 1884) thus far. The principal point of delivery is at Buffalo, N. No less than 2,000 head were on sale at the Buffalo cattle-yards on the 8th of September, 1884, five or six loads of which were sent forward to Liverpool, England, bond. On the same day one dealer sold 1,500 head steers, the largest number sold by one person in any one day. Canadian vessel owners complain of the keen rivalry between the great American trunk lines, as they reduce rates to so low a minum that the Atlantic steamers on the Montreal and Quebec route can scarcely keep up or "down" with the rates given from the United States Atlantic ports.

THE COAL TRADE OF BUFFALO.

Buffalo, as a shipping point for coal, is the most prominent of the United States lake ports, and in the near future, from indications observable, business will assume colossal proportions. The receipts and shipments increase annually in a ratio which a few years since, would have been deemed simply impossible. The facilities for rapid handling by chutes, &c., the enlarged tonnage at the disposal of the lake transportation companies, as well as the sail-vessels and barges owned by individuals bringing grain, ore, and lumber from the West, seeking return cargoes at low rates of freight, are factors which draw the coal to this port for distribution. Lines of propellers now ply on the lakes in connection with several of the coal companies, and as they are a paying investment a further increase in their number may be expected. Railroads centering here are becoming more numerous year by year. With a "free" Erie Canal, doubtless that channel will be made available for transportation of coal east to a greater extent at low rates of freight. Manufactories of all kinds are multiplying rapidly, and Buffalo bids fair in a few years to be a great manufacturing center.

The coal trade of Buffalo is shown by the following statement of receipts and shipments for ten years:

ANTHRACITE COAL.

The production of anthracite coal in Pennsylvania for the past ten years (after deducting about 8 per cent. of the quantity shipped for local use in and about the mines) was as follows:

Years.	Schuylkill district.	Lehigh district.	Wyoming district.	Total.
	Gross tons.	*Gross tons.*	*Gross tons.*	*Gross tons.*
1872	6,694,890	3,873,339	9,101,549	19,669,778
1873	7,212,601	3,705,506	10,309,755	21,227,862
1874	6,866,877	2,773,836	9,504,408	20,145,121
1875	6,281,712	2,834,605	10,596,155	19,712,472
1876	6,221,934	3,854,919	8,424,158	18,501,011
1877	8,195,042	4,332,760	8,300,377	20,828,179
1878	6,282,226	3,237,449	8,085,587	17,605,262
1879	8,960,329	4,595,567	12,586,293	26,242,689
1880	7,554,742	4,463,221	11,419,279	23,437,242
1881	9,253,958	5,294,676	13,951,383	28,500,016

The shipments for 1881 were divided among the following lines of transportation or interests:

Interest.	Gross tons.	Interest.	Gross tons.
Philadelphia and Reading Railroad...	6,940,376	Pennsylvania Railroad Company....	2,211,363
Lehigh Valley Railroad	5,721,869	Pennsylvania Coal Company	1,475,380
Central Railroad of New Jersey	4,085,423	New York, Lake Erie and Western Railroad Company.....	465,230
Delaware, Lackawanna and Western Railroad	4,388,969		
Delaware and Hudson Canal Company.	3,211,406	Total gross tons	28,500,016

48.96 per cent. from the Wyoming; 18.58 per cent. from the Lehigh; and 32.46 per cent. from the Schuylkill region.

The Pennsylvania Railroad interest includes the Shamokin, Lykens Valley, and some Wyoming coal; the Philadelphia and Reading Railroad, the various grades of Schuylkill; the Lehigh Valley Railroad, one fourth Wyoming and three-fourths Lehigh; the Central Railroad of New Jersey, one-half Lehigh and one-half Wyoming; the Delaware and Hudson Canal Company, the Delaware, Lackawanna, and Western Railroad, the Pennsylvania Coal Company, and the New York, Lake Erie and Western Railroad—all from Wyoming.

The shipments from the mines for 1881 may be estimated in the following proportions in the absence of exact figures:

* By Philadelphia and Reading Railroad—one-seventh westward, six-sevenths eastward.

By Lehigh Valley Railroad—one-sixth north, balance to New York and northeast.

* By Central Railroad New Jersey—nearly all to tide-water.

* By Delaware, Lackawanna and Western Railroad—1,250,000 tons north; balance to New York and northeast.

* By Delaware and Hudson Canal Company—half north; half south.

By Pennsylvania Railroad Company—north and west.

* By Pennsylvania Coal Company—all north from the mines.

By New York, Lake Erie and Western Railroad—east and west.

The quantity of anthracite coal carried on the New York State canals, in both directions (east and west), as stated by the canal auditor, was as follows in the years specified:

Year.	Net tons.	Year.	Net tons.
1872.....	936,798	1877.....	1,015,239
1873.....	967,593	1878.....	681,400
1874.....	840,820	1879.....	810,517
1875.....	1,013,329	1880.....	762,598
1876.....	759,374	1881.....	902,214

There is a coal mined in Sullivan County, Pennsylvania, called the "Loyal Sock Anthracite," which is shipped over the State Line and Sullivan Railroad to the Pennsylvania and New York railroads. The output is not included in the statistics here given. The product for the past ten years compares as follows:

Years.	Gross tons.	Years.	Gross tons.
1872.....	54,966	1877.....	23,000
1873.....	35,267	1878.....	37,000
1874.....	33,896	1879.....	50,000
1875.....	16,522	1880.....	65,000
1876.....	30,000	1881.....	90,000

The inspectors of mines, in their report for 1880 (the census year) give the following statement of the output of the anthracite coal collieries of Pennsylvania,

* These lines also shipped small lots by Erie Canal east and west.

dividing the region into certain districts for convenience of inspection of ventilation, &c.:

Districts.	Gross tons mined.
1. Pottsville district	1,461,070
2. Shenandoah district	3,752,986
3. Shamokin district	3,461,372
4. Wilkes Barre district	5,708,813
5. Eastern district of Luzerne and Lackawanna Counties	6,286,457
6. Southern district of Luzerne and Carbon Counties	3,980,037
Total gross tons	24,658,735
Total number of employés, including miners, laborers, and men and boys outside and inside	73,[illegible]

The above figures include the coal used in the mines and sold to employés, averaging seven-eight per cent. of the quantity marketed.

The following statement shows the number and location of the collieries in the anthracite coal regions of Pennsylvania, divided into districts and three regions:

SCHUYLKILL REGION.

First or Southern coal field.—Lykens Valley district, 5; Lorberry district, 5; East and West Schuylkill district, 41; Panther Creek district, 8; total, 59 collieries.

Second or Mahanoy coal fields.—Shamokin district, 20; West Mahanoy district, 51; East Mahanoy district, 9; total, 80 collieries.

The products of the Lykens Valley, Lorberry, East and West Schuylkill, and Shamokin mines are shipped by the Philadelphia and Reading Railroad, excepting a small percentage in the Shamokin district which takes the Northern Central Railroad. The bulk of the West and East Mahanoy mines product is shipped by the Philadelphia, and Reading Railroad, as only twelve use the Lehigh Valley Railroad and one the Northern Central Railroad.

LEHIGH REGION.

Middle coal field.—Green Mountain basin, 2; Black Creek basin, 15; Hazelton basin, 10; Beaver Meadow basin, 5; total, 32 collieries.

The products of the above mines, with few exceptions, are shipped over the Lehigh Valley Railroad; the exceptions are by the Lehigh and Susquehanna Railroad and the Pennsylvania Railroad.

WYOMING REGION.

Northern coal field.—Plymouth district, 17; Wilkes Barre district, 35; Pittston district, 22; Scranton district, 38; Carbondale district, 19; total, 139 collieries.

The shipments from these districts are divided as follows: 19 collieries by the Lehigh Valley Railroad, 35 by the Lehigh and Susquehanna Railroad, 56 by the Lackawanna and Blossburg division of the Delaware, Lackawanna and Western Railroad, 17 by the Delaware and Hudson Canal Company, 1 by the Pennsylvania and New York Railroad, and 3 by the Pennsylvania Coal Company.

Grand total collieries in the anthracite coal region, 302.

The anthracite collieries lie so scattered over the very large territory containing the coal beds that it is difficult to give *exact distances* from the place of production to Buffalo, but it is estimated that the mines from which the principal supplies are received at this point are of an average distance of 265 miles.

Anthracite coal is received at Buffalo by the following lines of railroads:

Philadelphia and Reading Railroad—none received by this route.

Lehigh Valley Railroad—at Waverly, N. Y., with New York, Lake Erie and Western Railroad; at Lyons, N. Y., with New York Central and Hudson River Railroad.

Central Railroad of New Jersey—none received by this route.

Delaware, Lackawanna, and Western Railroad—at Syracuse, N. Y., with New York Central and Hudson River Railroad.

Delaware and Hudson Canal Company—at Honesdale, Pa., with New York Lake Erie and Western Railroad Company.

Pennsylvania Railroad Company—at Emporium, Pa., with Buffalo, New York and Philadelphia Railroad.

Pennsylvania Coal Company—at Honesdale, Pa., with New York, Lake Erie, and Western Railroad.

New York, Lake Erie and Western Railroad—New York, Lake Erie and Western Railroad, east and west.

Anthracite coal is received by the Erie Canal at Buffalo, as follows:

Philadelphia and Reading Railroad—at Elizabethport, N. J.

Central Railroad of New Jersey—at Port Johnson, N. J.

Pennsylvania Coal Company—at Newburg, N. Y.

Delaware and Hudson Canal Company—at Rondout, N. Y.

Delaware, Lackawanna and Western Railroad—at Ithaca and Syracuse, N. Y.

Anthracite coal is *shipped* from Buffalo by the following routes:

To Western United States points, viz, to Chicago, Milwaukee, Duluth, and intermediate ports on Lakes Huron, Michigan, and Superior, by propellers, steam barges, and sail vessels, where it is used for local consumption, except a certain percentage which is reshipped by railroads to interior western points.

Also via Lake Shore and Michigan Southern Railroad to its connecting western points.

Also via the Canada Southern Railroad, Grand Trunk Railroad of Canada, and Great Western Railroad of Canada, to points in Michigan, and thence by United States railroads through that State to Illinois, Wisconsin, Minnesota, &c.

To Canadian points: By the Canada Southern Railroad, the Grand Trunk Railroad of Canada, and the Great Western Railroad of Canada, and their connecting lines.

The following is a statement showing the amount of Pennsylvania anthracite coal, in gross tons (partly estimated), distributed to western United States points and to the Dominion of Canada in 188., compiled mainly from official sources:

	Gross tons.
By lake from Buffalo, N. Y., (including 30,000 tons of Blossburg or semi-bituminous)	800,000
By rail from Buffalo, and the International and Niagara Suspension Bridges	695,000
By lake from Erie, Pa	85,000
By rail from Erie, Pa	165,000
By rail from Dunkirk, N. Y., Pittsburgh, Salamanca, Baltimore, &c	310,000
From Lake Ontario ports through Welland Canal (Canada)	65,000
Total	2,120,000
To Canadian points by lake and railroads	695,000
Total to West and Canada	2,815,000

The general distribution of the production of 1881 (partly estimated) was as follows:

	Gross tons.
To western United States points	2,120,000
To Canadian points	695,000
Local consumption in Buffalo, N. Y	275,000
Other consumption in Pennsylvania, New York, and New Jersey	12,425,000
To New York Harbor and points on the Hudson River, Long Island Sound, and Atlantic coast, &c	12,000,000
To Southern points	800,000
To Pacific coast	15,500
To places not enumerated	169,516
Total production of 1881	28,500,016

BITUMINOUS COAL.

There are twenty-seven counties in Pennsylvania in which bituminous coal is mined. The estimated quantity produced in 1881 was 20,000,000 gross tons.

The State is divided into four districts for inspection as to ventilation, &c., as follows:

(1) The counties of Greene, Washington, Fayette, Bedford, Somerset, and that portion of Allegheny lying south of the Ohio, Monongahela and Youghiogheny Rivers; containing one hundred and thirty-eight mines.

(2) The counties of Beaver, Butler, Armstrong, Indiana, Westmoreland, and that portion of Allegheny lying north of the Ohio, Monongahela and Youghiogheny Rivers; containing sixty-six mines.

(3) The counties of Lawrence, Mercer, Crawford, Erie, Warren, Forest, Venango, Clarion, Jefferson, Clearfield, Cameron, Elk, and McKean; containing fifty-six mines.

(4) The counties of Cambria, Huntingdon, Blair, Center, Clinton, Lycoming, Sullivan, Potter, Tioga, and Bradford; containing thirty-four mines.

Grand total mines in the four districts three hundred and ninety-four.

Bituminous coal is brought to Buffalo by railroad from the following mines:

Name.	By the—	Average distance brought.
		Miles.
Rochester mines	Buffalo, New York and Philadelphia Railroad, and the Buffalo and Southwestern Railroad.	186
Hamilton Coal Company		194
Du Bois mines		185
Reynoldsville mines		193
Powers, Brown & Co		194½
Sandy Lick Coal Company		185
Fairmount Coal Company		234
Catfish mines		198
Stoneboro' mines	Lake Shore and Michigan Southern Railroad.	204
Saint Mary's Coal Company	Buffalo, New York and Philadelphia Railroad.	143
Cameron mines		125
Buffalo Coal Company		108

The total quantity received in Buffalo during the year 1881 was 923,919 tons of 2,000 pounds, which was distributed as follows:

	Tons.
To all points in Canada by the Grand Trunk, Great Western, and Canada Southern Railroads and their connecting lines	250,000
To points on the Erie Canal east of Utica, N. Y., principally used for manufacturing gas	29,222
Used by steamboats, propellers, tugs, and barges in the port of Buffalo, N. Y., for fuel	60,000
Used by Buffalo gas-light and coke companies	25,000
Used by Buffalo grape-sugar works, &c	125,000
Used by New York Central and other railroads at Buffalo for use of their engines, workshops, &c	150,000
Used by Buffalo elevators, mills, factories, furnaces, &c	284,697
Total distribution	923,919

The imports by lake included in above statement of receipts were 7,860 tons, shipped from Cleveland, Ashtabula, and Black River, all in the State of Ohio and ports on Lake Erie. This coal was mined in Ohio the names of the mines unknown.

The total production of bituminous coal in Pennsylvania for the past three years compares as follows:

Year.	Gross tons.
1879	17,044,000
1880	19,393,000
1881	20,000,000

The quantity of bituminous and semi-bituminous coal carried on the New York State canals in both directions (east and west), as stated by the canal auditor, was as follows in the years specified:

Years.	Net tons.	Years.	Net tons.
1872	525,797	1877	257,642
1873	658,266	1878	207,319
1874	572,342	1879	160,538
1875	203,762	1880	136,213
1876	277,324	1881	206,935

SEMI-BITUMINOUS OR BLOSSBURG.

The production from the collieries in the semi-bituminous Blossburg district, in *Tioga County*, Pennsylvania, of a coal which is economically used for rolling-mills

d blacksmithing purposes with the best possible results, compares as follows for
years:

Years.	Gross tons.	Years.	Gross tons.
2	849,262	1877	602,245
3	991,057	1878	652,297
4	796,388	1879	874,010
5	581,782	1880	921,555
6	616,984	1881	1,178,581

The tonnage or output of 1881 was produced by the three companies in the follow-
g quantities:

	Gross tons.
ossburg	382,393
orris Run	378,503
all Brook	417,685

The McIntyre Company placed on the market a coal of a similar character to the
lossburg during the past ten years in the following quantities:

Years.	Gross tons.	Years.	Gross tons.
72	171,420	1877	183,715
73	212,462	1878	154,205
74	138,907	1879	127,632
75	164,507	1880	216,225
6	208,701	1881	236,922

There are three other companies working in this district. The production of their
nes for 1881 was 451,806 gross tons.
The aggregate figures of the output for the whole district were 1,867,309 gross
s.
Of the 65,000 tons (of 2,000 pounds) of Blossburg or semi-bituminous coal received
e in 1881 by railroad, mined in Tioga County, Pennsylvania, a very small portion
s shipped at or near Blossburg to Corning, N. Y., on the Tioga State Line and
rning, Cowanesque and Antrim Railroads, 45 miles; thence by the New York, Lake
e and Western Railroad to Buffalo, 132 miles—total distance, 177 miles. The bulk
m Blossburg to Corning, 45 miles; thence to Geneva, 58 miles; Geneva to Roch-
er, 51 miles; and thence by the New York Central and Hudson River Railroad to
ffalo, 69 miles—total distance, 223 miles. Or from McIntyre to Canandaigua, via
rthern Central Railroad, 123 miles; thence by the New York Central and Hudson
ver Railroad to Buffalo, 99 miles—total distance, 222 miles.
The 500 tons received by canal was shipped by rail from Blossburg to Tioga, and
nce to Watkins; from Watkins by canal boats, via Seneca Lake, to Geneva; thence
the Cayuga and Seneca Canal to Montezuma, on the Erie Canal, and from that
nt to Buffalo—total distance, 281 miles.
The distribution of the 65,500 tons was about as follows:

	Tons.
pped by lake from Buffalo to western points	30,000
pped by railroads from Buffalo to Canada and western points	20,000
me consumption	15,500
Total receipts	65,500

THE LAKES AND THEIR TRANSPORTATION INTERESTS.

The following statement contains a short description of the transportation lines
ng business at and from Buffalo to the ports on the inland lakes, viz, Erie, Huron,
chigan, and Superior; the nature of the traffic carried on; the past and present
dition of the vessel interests; the tonnage and capacity of the vessels navigating
lakes now and sixty-seven years since; the rates of freight; arrivals and clear-
ces at Buffalo; the tonnage of this and other ports; the competition of the rail-
d companies and their lines of propellers; the growth of the grain trade of Buf-

falo; the exports of lime, cement, salt, coal, railroad iron, &c; the improvements on the lakes, harbors, &c., now in progress, and other topics of interest in connection with the foregoing subjects.

The earliest record of the tonnage of the lakes that is to hand is contained in a little book published in 1816, in which year the whole tonnage of the vessels navigating the lakes was at the ports on Lake Erie, including Detroit, Mich., and aggregated only 2,667 tons—less than the tonnage of one of our largest propellers of the present day! Buffalo, Detroit, Cleveland, Presque Isle, and Sandusky were the ports that claimed the vessels. Chicago, Milwaukee, Toledo, Erie, and other ports were evidently unknown. These vessels ranged in size from 11 to 99 tons, excepting two which were 132 and 104 tons respectively. What a marked contrast is the following statement of the tonnage of Buffalo of 1882 and several preceding years:

Schooners	58
Sloop	1
Total sail vessels	59
Total gross tonnage	29,559.53
Iron propellers	5
Iron yachts	2
Total iron steam vessels	7
Wood propellers	52
Wood side-wheel steamer	1
Wood tug propellers	50
Wood steam yachts	10
Wood steam canal boats	7
Total wood steam vessels	120
Grand total iron and wood steam vessels	127
Total gross tonnage iron vessels	6,102.84
Total gross tonnage wood vessels	64,958.85
Grand total tonnage iron and wood steam vessels	70,961.69
Number of barges	30
Total gross tonnage of barges	8,485.91
Grand total, 216 vessels, tonnage	109,007.13

The following statement shows the comparisons for ten years ending June 30, 1882.

Years.	Schooners.		Propellers.		Barges.		Iron propellers.		Grand total, all classes.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
1882	59	29,559.53	120	64,858.85	30	8,485.91	7	6,102.84	216	109,007.13
1881	62	30,219.28	116	56,975.10	25	6,437.07	8	6,408.96	211	100,040.41
1880	74	36,158.28	105	51,010.29	26	5,994.04	7	6,381.08	212	99,543.69
1879	74	36,922.90	108	49,227.16	22	5,203.32	7	6,381.08	211	97,734.46
1878	79	37,456.42	110	46,704.50	20	4,706.07	8	7,904.30	217	96,773.29
1877	89	40,645.70	111	45,567.94	21	5,401.25	7	7,590.27	228	99,205.16
1876	98	43,102.43	114	45,251.70	18	4,756.59	7	7,590.27	237	100,700.99
1875	102	43,865.74	117	44,822.87	17	4,855.33	6	7,484.76	242	101,028.70
1874	114	44,979.00	137	45,266.37	13	3,462.76	6	7,484.76	270	101,192.89
1873	101	38,547.43	125	42,699.99	12	3,065.69	6	7,487.76	244	91,797.87

showing the number and tonnage of sailing vessels, steam vessels, and barges in oms district of the United States on the inland, lakes and rivers on June 30,

Districts and ates.	Sail vessels.		Steam vessels.		Barges.		Grand total, all classes.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
t	17	980.01	11	2,422.03	.....	.....	28	3,402.04
N. Y	24	1,560.31	8	867.17	7	856.94	39	3,284.42
e, N. Y	7	702.61	15	878.64	9	1,475.91	31	3,057.16
ut, N. Y	34	3,596.16	20	746.95	1	35.40	55	4,378.51
Y	46	12,183.00	24	1,030.09	.....	.....	70	13,213.09
Y	7	1,837.99	16	2,485.00	.....	.....	23	3,862.99
Y	8	1,824.77	8	2,306.00	.....	.....	16	4,130.77
k, N. Y	61	30,092.54	128	70,996.15	30	8,485.91	219	109,574.60
. Y	1	24.16	1	22.97	.....	.....	2	47.13
	12	4,815.65	31	24,793.73	.....	.....	43	29,609.38
Ohio	112	42,841.38	70	36,621.45	5	1,866.06	187	81,328.89
Ohio	56	9,017.78	29	7,201.87	2	361.60	87	16,581.25	
	15	5,829.94	28	7,503.25	4	1,679.40	47	15,012.59
h	155	34,949.65	136	43,600.49	21	4,383.72	312	82,933.86
h	154	24,085.75	118	24,466.24	71	20,561.97	343	69,113.96
ich	31	5,823.57	58	6,975.83	.....	.....	89	12,799.40
lich	158	17,006.13	174	17,479.33	13	3,125.47	345	37,610.93
	251	60,644.78	117	12,534.43	.....	.....	368	73,179.21
Wis	261	56,256.68	100	29,116.85	1	73.58	362	85,447.11
an	2	78.72	9	208.83	.....	.....	11	287.55
	1,412	313,691.58	1,101	292,256.80	164	42,905.96	2,677	648,854.84

nage of the inland lakes in 1877 and 1882 compare as follows:

Description of vessels.	1877.		1882.	
	Number.	Tonnage.	Number.	Tonnage.
nd side-wheel steamers	923	201,125	1,101	292,256
	1,714	324,304	1,412	313,692
	192	47,207	164	42,906
	3,729	572,636	2,677	648,854

onnage 1877, 154; average tonnage 1882, 242; a large increase in size in favor of 1882.

ere built on the inland lakes during the year ending June 30, 1882, 254 ves-
e three kinds named above, measuring in all 58,369 tons; also 4 iron pro-
easuring 6,248 tons; grand total new tonnage, 64,617.

1815, in consequence of the so-called war of 1812, nothing seems to be known
nber of arrivals and clearances at this port; in that year 64 were recorded
e season of navigation. Gradually increasing year by year until 1824, when
reported. After the Erie Canal opened, in 1825, the average increase annu-
ur years was 50 per cent. In 1830 the statistics show 2,052 vessels entered
ed.

the first cargo of grain, about 2,000 bushels of wheat, received at Buffalo,
Lake Michigan. It was hawked around for several days, and the owner, not
e to find a purchaser *for so large a quantity*, finally peddled it from wagons
living along the present Lake Shore road. In 1839 a Chicago party shipped
cargo from thence of less than 2,000 bushels of wheat to this port.

re many lines of transportation carried on by individuals or firms without
ictive name. The number of vessels owned or controlled by these parties
two to three and upwards. Some own a propeller line and consorts; others
ls only, and again others only a propeller or propellers, and take their
f towing barges. (The greater number of these barges are the old and
sail vessels of former days, now utilized in the lumber and ore trade, as they
small tonnage to carry freight profitably by sail at the low rate of trans-
which has prevailed since the building of the mammoth propellers, barges,

and schooners of late years.) These lines bring to Buffalo from Lake Erie and Upper Lake ports principally grain of all kinds, and when they have consorts or barges, then grain, lumber, staves, railroad ties, copper, ore, &c. Their return freight consists of coal, lime, cement, salt, and railroad iron; occasionally, but very rarely, merchandise, that being monopolized by the lines connecting with the railroads centering here, and which is taken on a through rate from New York and connecting points on very cheap terms, which independent lines cannot compete with. (It is said that these transportation lines charge about as much from Buffalo to western points as they do from New York to said points.)

These railroad propeller transportation lines contract for general merchandise freight from New York, via Erie Canal, to Buffalo, thence to Chicago and Milwaukee by lake, at 30 cents for first and second class, 20 cents for third class, and 18 cents for fourth class per gross ton of 2,240 pounds.

General merchandise includes dried fruits, canned fruits, domestic woolens and cottons, furniture, castings, domestic and foreign salt, sugar, molasses, coffee, crockery, carriages, nails and spikes, &c., in fact, all articles that are shipped from East to West for consumption in addition to railroad iron, spiegeleisen, cement, &c.

To show the sentiment which exists at this port and at other places relative to the steady encroachment by the railroad propeller lines upon individual interests, and the future prospects of navigation under such conditions at no distant day, the following remarks, made by Mr. Jewett M. Richmond on retiring from the presidency of the Buffalo Board of Trade, in 1880, may possess more than a transient value:

"I cannot view without anxiety the increased tonnage which is put on the lakes every year by the different railroad corporations as threatening to our free marine. The railroads are building large propellers every year, and have been through our late depressed times, when individuals did not feel it prudent to do so. The railroads fostered their lake crafts by giving them advantages in shipping over their roads they would not give to private parties, thus making it possible for them to make money while private parties were losing. Is it not possible, in this way, in time for the railroads to control the lake business, driving off the free marine, thus virtually laying the tracks of their railroads through our great chain of lakes, and this in the face of the law which declares that no railroads shall own or be interested in corporations of this kind?

"Or has the time arrived, which was so long ago predicted, when they are a law unto themselves? It is but a short time since the first law was passed giving a charter to build railroads. They were at first prohibited from carrying freight. They then asked to have this law changed so they might carry freight by paying tolls, and they then asked to be released from paying any tolls, which was granted. They have continued to ask concessions either at Albany or through the State ever since, and they have been given them.

"It has now come to the point when it is an open question whether the people can get any legislation, either at Albany or Washington, without it is agreeable to the great railroad corporations."

Owing to the large tonnage of vessels now navigating the lakes the average cost of transportation has been very much reduced. Thirty years ago there was scarcely any sailing vessels of more than 10,000 to 15,000 bushels wheat capacity; now they range from 20,000 to 65,000 bushels. Our propeller lines now own many mammoth craft, bringing down at each trip to this port very large cargoes; as, for instance, the propeller-barge Onoko, with 158,000 bushels of oats, or 107,000 bushels of corn, or 100,000 bushels of wheat, on a draft of about 14 feet of water. The cost for construction is, of course, largely in excess now from what it was in the days of the small tonnage, but the lessened number of the crew, and in proportion to size the other expenses of the voyage, together with the augmented receipts, considerably enhances the profits of the investment, so that a low rate of freight pays comparatively handsomely with economical management. The addition of a consort, or barges in connection with the propeller, is another factor in cheap transportation.

The smallest sail vessel (schooner) carrying grain, on the register June 30, 1882, was of 55 tonnage; the largest, a schooner-barge, 1,481 tonnage; the smallest propeller, about 60 tonnage; the largest, 2,164 tonnage. Their freight tonnage, it must be understood, is about one-third more than the figures given.

An immense tow-schooner or barge will be placed in commission this month called the Golden Age. She has eight hatches, six or eight spars, and her dimensions are as follows: Length of keel, 287 feet; beam, 39½ feet; depth, 21½ feet; length, over all, 300 feet; capacity, 130,000 bushels of corn, or 121,000 bushels of wheat, or 227,000 bushels of oats; drawing 14 feet of water.

Propellers on the lakes of the largest size are really what would be called steamships on the ocean. The nomenclature should be changed to suit the times.

The increase of the tonnage of the vessels employed for freighting on the upper lakes tends to cheap carrying; the competition in freighting for the longest voyage

lose that the new vessels, both sail and steam, must of necessity be made as those preceding them, so that they can carry their cargoes at the lowest rates. ghting shipping on the upper lakes, or rather a large majority of them, are eat tonnage as similar ones used upon the ocean for long voyages—a fact which prise owners of ocean shipping.

ail vessels and most of our propellers are built of wood. Propellers of iron ing into use more and more. The former range from 600 tons to 3,000 tons y, the latter from 1,000 to 3,000 tons. (Included in the sail vessels are schooners s often used as barges and called so, and many are of the largest tonnage.)

omparative meager earnings of the smaller vessels, or rather their ability to ights, is thus shown: The 5,000-bushel vessels of 1842, at the rate of 2 cents hel for wheat, would earn $100 for her down cargo; this would not pay the s. The 80,000-bushel vessel at that rate would earn $1,600 per trip, besides a westbound cargo, which the smaller vessel did not always have. Thus it seen that freights on produce had to be heavy necessarily in the early days. bout 1840 until about 1855 vessels bound west frequently had to take sand for it being oftentimes impossible to secure return cargoes promptly.

ustrate more fully the gradual increase of the freighting capacity of our lake it should be remembered that in 1842 ordinary craft carried about 5,000 bush- heat; in 1848, say, 12,000 bushels, in 1850, about 15,000 bushels; in 1857 they anced to 25,000 bushels, and in 1863 to 30,000 bushels; in 1868 we have 40,000 , and in 1870, 50,000 bushels; in 1877, about 80,000 bushels; now, in 1883, sail am vessels carrying 100,000 bushels (equal to 3,000 tons) navigate our inland

61 the barge system was introduced and now it is a great success, for nearly lumber brought to Buffalo and Tonawanda is carried this way in strings or from three to six vessels, towed by a propellor or tug. A million and a half million feet of lumber are often brought down from Saginaw and other places tow. A single vessel could not now pay expenses at the lumber freights at ruling.

71 the use of a propeller with a barge or consort attached was first introduced, n and since has proved a success in every way in carrying grain.

following statement shows the receipts of flour and grain at Buffalo for forty- ears, and illustrates the growth of the lake trade at this port and, indirectly, ole commerce of the Lakes Erie, Huron, Michigan, and Superior and their ries:

Years.	Grain.	Grain (including flour reduced to wheat.)
	Bushels.	*Bushels.*
.....	543,461	1,239,351
.....	6,491,522	13,366,167
.....	20,123,667	25,753,967
.....	51,820,342	53,388,087
.....	46,038,598	50,074,648
845, ten years.....	14,368,908	41,851,483
855, ten years.....	113,766,005	174,717,437
865, ten years.....	344,213,324	432,390,318
875, ten years.....	526,976,775	597,121,670
.....	46,038,598	50,074,648
.....	61,734,071	66,199,291
.....	79,176,152	84,046,052
.....	74,379,829	78,865,354
.....	105,453,372	112,042,937
.....	56,806,645	62,062,895
.....	50,833,590	56,830,340
tal, 47 years.....	1,475,529,318	1,757,202,415

nadian receipts through custom-house not included in 1877, 1878, 1879, 1880, 1881, and 1882.

The following table shows the imports of principal articles into this port, by lake, for three years past:

Articles.	1880.	1881.	188
Barley.....bushels..	335,925	282,510	701,500
Coal.....tons..	13,078	7,860	8,000
Corn.....bushels..	62,214,417	34,434,830	21,064,500
Copper.....packages..	2,840	410	9,855
Copper.....tons..	9,971	16,540	8,915
Copper.....cakes and bars..	1,100	1,961	13,831
Fish.....packages..	12,967	4,750	7,815
Flour.....barrels..	1,317,911	1,051,250	1,000,250
Flaxseed.....bushels..	1,378,886	2,178,938	2,740,150
Feed.....sacks..	86,717	86,094	286,430
Hoops.....number..	10,765,700	7,964,000	1,431,000
Heading.....barrels..	954,597	8,516	3,780
Iron ore.....tons..	8,468	13,747	14,400
Iron, pig.....do ...	9,018	10,820	12,347
Lead.....pigs..	19,127	17,243	152,338
Lard.....packages..	247,120	25,424	53,750
Lumber.....feet..	214,169,352	240,302,100	248,196,000
Lath.....pieces..	4,673,050	2,868,000	5,251,050
Oats.....bushels..	1,649,350	3,565,737	1,650,170
Oilcake.....packages..	89,995	45,497	123,420
Pork.....barrels..	40,428	11,922	4,005
Peas.....bushels ..	10,775	6,038	....
Rye.....do....	743,451	22,210	767,300
Seed.....bags..	85,828	23,221	25,820
Staves.....number..	7,875,884	3,986,275	7,074,400
Stavebolts.....cords..	10,101	10,065	20,700
Shingles.....number..	33,058,000	25,249,000	44,000,750
Shooks.....do....	.....	964,000	1,510,000
Tobacco.....packages..	6,026	9,356	13,710
Ties.....number..	167,994	419,842	840,200
Wheat.....bushels..	40,510,229	18,495,220	28,050,000

The following is a summary statement of the arrivals and departures of vessels, with their tonnage and crews, in the district of Buffalo Creek, for thirty one years:

Years.	Number of vessels.	Tonnage.	Men.	Years.	Number of vessels.	Tonnage.	Men.
1852.....	9,441	3,092,247	127,491	1868.....	11,812	4,254,339	116,220
1853.....	8,298	3,252,978	128,112	1869.....	10,201	4,007,496	103,673
1854.....	8,942	3,990,284	120,838	1870.....	10,625	4,157,793	105,796
1855.....	9,211	3,360,233	111,575	1871.....	10,894	4,832,641	15,2[illegible]
1856.....	8,128	3,018,589	112,051	1872.....	10,303	4,678,058	106,2[illegible]
1857.....	7,581	3,226,806	132,183	1873.....	9,959	4,886,733	107,7[illegible]
1858.....	8,838	3,329,246	86,887	1874.....	7,447	3,641,019	82,[illegible]
1859.....	10,521	5,952,626	118,119	1875.....	6,278	3,259,889	71,[illegible]
1860.....	11,517	4,710,175	120,497	1876.....	4,624	2,757,966	55,[illegible]
1861.....	13,886	5,963,896	144,173	1877.....	6,785	3,539,219	73,[illegible]
1862.....	16,390	6,689,191	166,133	1878.....	8,743	4,668,688	(*)
1863.....	15,376	6,757,903	157,415	1879.....	8,447	4,442,717	(*)
1864.....	14,105	6,891,348	148,161	1880.....	10,308	5,995,747	(*)
1865.....	13,746	7,032,593	145,074	1881.....	6,745	4,536,223	(*)
1866.....	13,682	6,954,859	144,622	1882.....	7,333	4,405,003	(*)
1867.....	12,826	5,806,960	129,300				

* No report.

The improvements in the machinery of propellers by the use of compound engines and tubular boilers, the saving of room as well as the less consumption of fuel, together with the cheapness of the coal burned, have all tended, in a great degree, to steadily increase navigation on the lakes by steam to the gradual, and in the near future, probable total extinction of sail vessels as carriers of produce.

The annexed table gives the names of the lake transportation companies running in connection with the several railroads here, the number and tonnage of the vessels, the ports of destination, those carrying freight, and those carrying passengers in addition to freight:

Name of company.	Headquarters.	Number of vessels.		Tonnage of vessels.		Propellers carrying—		Destination, &c.
		Propellers.	Sail.	Propellers.	Sail.	Passengers and freight.	Freight only.	
'estern Transportation.	Buffalo, N. Y.	12	..	17, 832	.....	4	8	See note (*a*).
nion Steamboat	... do	15	2	19, 300	1, 690	3	12	See note (*b*).
nchor Line	... do	17	3	23, 807	1, 759	4	13	See note (*c*).
mmercial Line	... do	6	.....	8, 553	.....	.....	6	See note (*d*).
ehigh Valley Transportation.	... do	6	.....	7, 962	.....	.....	6	See note (*e*).
reen Bay Line	Manistique, Mich.	2	4	857	.....	2	.....	See note (*f*).
'abash Line	Toledo, Ohio .	4	.....	4, 062	.. ..	.....	4	See note (*g*).
'ard's Detroit and Lake Superior Line	Detroit, Mich.	5	.....	5, 200	.....	2	3	See note (*h*).
Total	.....	67	9	87, 573*	3, 449*	15	52	.....
ake Superior Transit.	Buffalo, N. Y.	10	.....	10, 896	.....	9	1	See note (*i*).

* Grand total tonnage of these lines 91,022.

(*a*) *Western Transportation Company.*—Miscellaneous freight to Chicago and Milwaukee. Passengers and freight to Detroit, Port Huron, Mackinaw, Milwaukee, Chicago, and intermediate ports on akes Huron and Michigan.
(*b*) *Union Steamboat Company.*—Miscellaneous freight to Chicago and Milwaukee.
(*c*) *Anchor Line.*—Miscellaneous freight to Chicago and Milwaukee.
(*d*) *Commercial Line.*—Miscellaneous freight to Chicago and Milwaukee. The propeller Roanoke unning to and from Chicago and Ogdensburgh, through the Welland Canal, stopping occasionally at ntermediate ports if cargo warrants.
(*e*) *Lehigh Valley Transportation Company.*—Coal to Chicago and Milwaukee.
(*f*) *Green Bay Line.*—Miscellaneous freight and passengers to Detroit, Port Huron, Mackinaw, aint Ignace, Sheboygan, Escanaba, Menominee, Green Bay, and Manistique.
(*g*) *Wabash Line*—Coal and miscellaneous freight to Toledo.
(*h*) *Ward's Detroit and Lake Superior Line.*—Miscellaneous freight and passengers to Cleveland, Detroit, Port Huron, Sault Ste. Marie, Marquette, Houghton, Hancock, Eagle Harbor, Ontonagon, Ashland, Bayfield, Duluth.
(*i*) *Lake Superior Transit Company.*—Passengers and miscellaneous freight to Erie, Cleveland, Detroit, Port Huron, Detour, Sault Ste. Marie, Marquette, L'Anse, Portage Lake, Eagle Harbor, Ontonagon, Ashland, Bayfield, Duluth. [This company is made up of vessels from the Western Transportation Company, the Union Steamboat Company, and the Anchor Line; their tonnage is included in the figures given in preceding table.]

These propeller lines run in connection with the following eastern railroads: New York Central and Hudson River, New York, Lake Erie and Western, Buffalo, New York and Philadelphia, Delaware, Lackawanna and Western, Lehigh Valley, and their branches. Also with lines of boats on the Erie Canal carrying coarse freight and bulky merchandise from New York and interior points. Their western and northwestern connections are all the important railroad lines operating from Chicago, Milwaukee, Duluth, and other stopping places over that portion of our continent.

The down freight of these transportation lines generally consists of flour and grain, occasionally copper, iron ore, seeds, fish, pork, lard, tobacco, wool, skins, &c.

The marked fluctuations that have taken place in lake freights is shown by the following figures, giving the average rates on wheat and corn per bushel from Chicago to Buffalo for a series of years, commencing with 1857 and ending 1882, inclusive:

Years.	Wheat, bushel of 60 pounds.	Corn, bushel of 56 pounds.	Years.	Wheat, bushel of 60 pounds.	Corn, bushel of 56 pounds.
	c. m. f.	*c. m. f.*		*c. m. f.*	*c. m. f.*
857	9 8 9	8 6 1	1870	5 8 8	5 4 3
858	3 7 6	3 2 5	1871	7 6 2	7 0 6
859	5 0 8	4 6 0	1872	11 4 6	10 5 4
860	9 8 9	8 9 2	1873	7 6 2	7 2 0
861	11 5 3	10 5 6	1874	4 0 3	3 6 7
862	10 4 9	9 6 0	1875	3 4 2	3 0 8
863	7 5 1	6 5 6	1876	3 1 1	2 6 0
864	9 5 8	8 9 4	1877	3 5 7	3 2 3
865	9 7 8	9 0 7	1878	3 1 7	2 7 8
866	12 3 4	11 4 1	1879	4 7 2	4 2 8
867	6 6 7	5 4 3	1880	5 6 4	5 1 5
868	7 1 4	6 0 5	1881	3 4 0	2 9 2
869	6 8 1	6 2 7	1882	2 5 0	2 0 0

The following statement, collated from the clearances issued during the season of navigation at the custom-house of this port, shows the exports of the articles named during the seasons of navigation in 1880, 1881, and 1882 westward by lake:

Articles.	1880.	1881.	1882.
Coal ..... tons..	589, 670	825, 240	1, 027. 500
Cement and plaster ..... barrels..	144, 125	170, 410	223. 810
Salt ..... do....	225, 982	109, 810	111, 000
Do ..... tons..	17, 725	11, 956	12, 810
Railroad iron ..... do....	35, 941	44, 462	61, 770
Do ..... bars..	21, 064	22, 100	24, 400

Many permanent improvements are in progress looking to the permanent enlargement of our inner harbor, by the formation of extensive docks, &c., on the property known as the Tifft farm. Eight miles of wharf frontage will be made on these lands, and the earth which is being excavated is being used to fill up several hundred acres of low lands. The Lehigh Valley Railroad Company is doing this work.

The Buffalo, Rochester and Pittsburgh Railroad Company, a coal road, is constructing a large basin with docks on trestles therein, in the upper part of our river.

Work on the Government breakwater is making slow but sure progress, and when completed will give this port an outer harbor unsurpassed on the lakes and of immense dimensions.

A tunnel under Niagara River is projected, and surveys have been made; the plan is perfectly feasible, it is said, and efforts are being urged for its construction by the formation of a company.

When the work of deepening the Detroit River at the Lime Kiln Crossing and the Sault Ste. Marie River channel are finished all will have been done that can be to give plenty depth of water to insure the passage of the largest vessels now built, or that are ever likely to be built, from Lakes Superior, Michigan, and Huron to Lake Erie.

The following brief synopsis of the works of these important undertakings may be read with interest:

The Lime Kiln Crossing.—The bed of the river at this point is of limestone, the channel winding and the current very swift.

An act of Congress in 1874 made an appropriation of $25,000 for removing bowlders and rocks from the Detroit River. It was partly expended.

In the fall of 1874 and summer of 1875 the Canadian Government spent $5,000 on the work.

In 1875 the American Government made a survey for improving this channel. The excavation is to be 2,680 feet in length, 300 feet in width, and is to give 20 feet of water. The line of the same is to be a gradual curve. The estimated cost $250,000.

In 1876 the balance of the $25,000 appropriated in 1874 was expended.

In June 1878, Congress appropriated $100,000 for this work, and in August of that year the work was begun. It has been carried on up to the present time with marked success.

Sault Ste. Marie River and Ship-Canal.—A survey and estimate of the cost of improving the channel now navigated of the Ste. Marie River (outside of the canal proper) was made many years since. It is intended when completed that there shall be 16 feet of water and a width nearly all the way of 300 feet; the total cost $225,000. (This does not include the deepening of the East Neebist Rapids, which the Canadian Government is at work upon.) The work is nearly completed.

The ship canal is situated on the American side of the river, and was constructed to overcome the rapids at a point 60 miles from Lake Huron and 15 miles from Lake Superior.

In 1853 a company was formed who undertook to construct the canal for the State of Michigan in consideration of a grant of 750,000 acres of land. It was begun in that year and opened for navigation in 1855; the cost in money value was about $1,000,000. It was 5,400 feet long, 100 feet wide at top water line, sides paved with stone where not through lock; depth of water at mean stage 12 feet. There was a guard gate at the head of the canal. The locks were two in number and were combined, each 350 feet long, 70 feet wide; depth of water on miter sill 12 feet; the lift of each 9 feet; and they were situated near the foot of the canal.

(From the increase in the size of vessels navigating the lakes this canal soon outgrew its usefulness.)

In July, 1870, Congress made an appropriation for improving the canal and in August of the same year the following details were agreed upon and since have been carried out at an expense of about $2,350,000. The canal was to be made 3½ feet deeper; slope walls removed and timber revetment substituted; the guard gate moved 700 feet

rther up stream; the walls of the old lock were to be prolonged up stream far ough to receive a pair of guard gates; a new lock was to be made opposite the old es and 100 feet distant therefrom, and it was to have but one chamber 515 feet be- een the hollow quoins, 80 feet in width, the lift 18 feet, depth ofwater on miter sill feet; the approach to the locks at the lower end to be lowered to deep water of 18 et.

The legislature of the State of Michigan, in 1869, by joint resolution authorized the ard of control to transfer the canal to the United States. This was not done until st year, when the canal was completed.

Lake Superior is destined in the near future to be the scene of more and more mari- ne activity, perhaps greater than all the other lakes. An extensive deposit of on ore lying to the northwest of Duluth, near the shores of the lake, has recently en explored and is now being worked. It is locally known as the Massaba iron nge. The ore is said to be easily and cheaply mined and fully equal to the best qual- es of that produced in the Superior region. This ore will doubtlessly be shipped om Duluth to Buffalo.

It may be as well to take note of the fact that the maximum size of the build of ssels necessary to navigate the lakes profitably has been attained. It is doubtful hether the Lime Kiln Crossing, the Sault Ste. Marie River and Canal, and the Saint air Flats Canal will ever be enlarged beyond their present depth, &c. They are now nsidered sufficient for all practical purposes.

The greater number of the large vessels now navigating the upper lakes cannot ss the new Welland Canal or the Saint Lawrence River improvements. If it were ssible to increase the depth of the upper lake channels so as to admit of the passage vessels of greater tonnage, it is to be doubted if it would be for the interest of the minion of Canada, which controls this matter, to undertake such improvements, vessels much larger than those now in service would proceed direct to Europe and t benefit her ports to any appreciable degree.

The enormous increase in the transportation of coal on the lakes for the past few ars has attracted considerable attention. Within a short time three of the princi- l anthracite coal companies' railroads—the Reading and Philadelphia, the Lehigh lley, and the Delaware, Lackawanna and Western—have extended their lines into is city, and provided themselves with extensive facilities for storing and shipping al by the erection of trestles and chutes in their yards, and by expending large sums money for docks, wharfage, &c., thus making Buffalo the great shipping port for t the lake cities, especially to the regions bordering upon the upper lakes as far as perior and the Northwest.

The bituminous coals of Pennsylvania, in very large quantities, as well as coke, are so brought here by the several railroads. Several thousand tons of bituminous coal e also received from Ohio ports by lake. By these channels it is that manufacturers d others obtain their cheap fuel.

The shipments, annually increasing in quantity by thousands of tons, of anthracite al from Buffalo to the treeless regions of the Northwest is a matter of really national portance. It gives return loading to the vessels which bring down to this port from e West the grains grown there, as well as iron ore from the Lake Superior regions, d copper and timber, economizing the carriage of such commodities to the farmer, e miner, the manufacturer, and the lumberman.

Since these coal-carrying railroads have commenced active operations here thou- nds of tons of excellent iron ores from the Lake Superior districts have been brought wn already this season for shipment to the coal regions of Eastern Pennsylvania in eir returning coal cars, and is a business destined to assume enormous proportions the future without much doubt.

The wheat of the Red River of the North Valley has been brought from Duluth to is city for 2 cents per bushel; this at the rate of 66⅔ cents per ton of 2,000 pounds r a distance of 1,000 miles, and is the cheapest freighting in the world. So low a te could not be attained but for the back loading afforded by the coal trade.

The distance to Buffalo by railroad carriage from the wheat fields of Minnesota and kota averages about 1,800 miles. They are 250 miles west of Duluth, and it can readily seen how very important to our grain-exporting trade is this cheap lake ight.

Another fact: The five prominent cities in the Union, viz, Washington, Baltimore, w York, Philadelphia, and Boston, are much nearer to Buffalo than to any other y on the upper lakes. This is not fully appreciated. Besides it is the most central ossing into the better portion of Canada; a crossing most advantageous to the British anitoban regions, for it provides them with access to our great sea-ports, which are en to navigation during the winter season whilst their outlets are closed by ice.

The American Pacific Railroads and the Canada Pacific Railroad will always find e route from Asia to Europe across our continent through our city, and from ence to our American sea-ports, the shortest and best.

THE RAILROADS AND THEIR TRANSPORTATION INTERESTS AND THE MANUFACTURING RESOURCES AND TRADE OF BUFFALO.

The following statement gives a brief but general view of the great interests that the railroad companies have at Buffalo; the number of railroads centering here, and their connections with all points; their traffic in grain, coal, lumber, cattle, &c.; also in carrying passengers and light freight; the coal companies doing business at this port; the coal trade of the city and its Western and Canadian connections; the receipts of the Lake Shore and Michigan Southern Railroad Company for the past three years; railroad freights to eastern points; fast freight lines; exports of grain from elevators; terminal facilities, &c. Also a summary of the manufacturing resources and business of Buffalo; its cattle and lumber trade; its elevators; its customs receipts, &c.

The location of the city of Buffalo, with its many obvious advantages, has at last fully met with the attention that it has long deserved by railroad corporations, and the result has been that Buffalo is now the great receiving and distributing center of a system which embraces all the important lines of communication, both for passengers and freight, east, west, north, and south.

Consumers of flour, grain, and Western produce of all kinds find that ample facilities are afforded at this port for shipping to all points in New York and Pennsylvania and the Eastern and Middle States. The sea-board markets of Boston, New York, Philadelphia, and Baltimore are, it may be said, at our city's door.

In addition to the Erie Canal (with its hundreds of boats) the following United States railroad transportation companies afford unequaled opportunities for distributing all products over a very large district covered by their lines, and they are now deeply interested in developing the trade of our city:

Delaware, Lackawanna and Western Railroad, through Southern New York, Eastern Pennsylvania, and to the sea-board.

New York Central and Hudson River Railroad, through Central New York to the New England States and to the sea-board.

New York, Lake Erie and Western Railroad, through Southern New York, Eastern Pennsylvania, and to the sea-board.

Lehigh Valley Railroad, through Eastern Pennsylvania and to the sea-board.

Buffalo and Southwestern Railroad (branch New York, Lake Erie and Western Railroad), through Southwestern New York and Eastern Pennsylvania.

Buffalo, New York and Philadelphia Railroad, through Southwestern New York, Northern and Eastern Pennsylvania, to the sea-board.

Buffalo, Pittsburgh and Western Railroad, to the oil regions of Pennsylvania and surrounding places.

Buffalo, Rochester and Pittsburgh Railroad, through Central New York and the Pennsylvania coal regions.

New York, West Shore and Buffalo Railroad will commence operating about October 1, 1883, through Central New York to the sea-board.

The narrow-guage system of Pennsylvania, around Bradford, Pa., and beyond that point, in connection with some of these lines before named and other railroads in the oil regions, &c.

(The storage charges of our Elevator Association and all other expenses attending the care of grain at Buffalo are moderate and compare favorably with those at other large grain centers. The important advantages to grain held at this point, however, are the nearness to Eastern consumers and the sea-board markets, and the great facilities for moving it rapidly at low cost.)

It is but a few years since that only four or five railroads terminated here; now, since the consolidation of many new ones with them, Buffalo has twelve to fourteen from the east, west, north, and south. If the consolidation of some of the earlier constructed roads had not taken place, at least twenty-five would be the number recorded.

The following is a list of the railroads centering here and of a few others having immediate connection with them on whose lines they run their own cars and use the head lines' depots for passengers and light freight:

(1) *New York, Lake Erie and Western Railroad.*—From Niagara Falls, through Tonawanda, to Buffalo. From Buffalo, through Attica, Gainesville, Hornellsville, Corning, Elmira, Waverly, Owego, Binghamton, Susquehanna, Port Jervis, Middletown, Suffern, Paterson, Jersey City, to New York; distance from Buffalo, 423 miles. *Southwestern Branch:* From Buffalo, through Gowanda, Dayton, to Jamestown, N. Y.; distance, 69 miles. From Buffalo, through Dayton, Salamanca, Carrollton, to Bradford, Pa.; distance, 79 miles. *Rochester Division:* From Buffalo, through Attica, Avon, to Rochester, N. Y.; distance, 85 miles. *Lockport Division:* From Buffalo, through Tonawanda, to Lockport; distance, 26 miles. *A branch* leaves Carrollton (a point east of Salamanca) and passes through Bradford to Jefferson County, Pennsylvania, which

bounds with the best of bituminous coal; total distance from Buffalo to its southern nd, 153 miles.

(2) *New York Central and Hudson River Railroad.*—From Buffalo, through Batavia, Rochester, Lyons, Syracuse, Canastota, Oneida, Rome, Utica, Fonda, Schenectady, Albany, Hudson, Poughkeepsie, Garrisons, Tarrytown, to New York; distance, 446 miles. *Lockport Branch:* From Buffalo, through Tonawanda, to Lockport; distance, 6 miles. *Lewiston and Niagara Falls branch:* From Lewiston, through Niagara Falls, La Salle, Tonawanda, to Buffalo; distance, 28 miles. *Batavia and Canandaigua Branch:* From Buffalo, through Batavia, Le Roy, Caledonia, Honeoye Falls, to Canandaigua; distance, 86 miles. *Niagara Falls and Rochester Branch:* From Niagara Falls, through Lockport, Medina, Albion, Holly, Brockport, to Rochester; distance, 76 miles. (Also small branches from Tonawanda to Batavia and from Batavia to Attica, which are feeders to the main line.)

(3) *Northern Central Railroad.*—At Canandaigua—From Buffalo, by the New York Central and Hudson River Railroad, to Canandaigua, 97 miles; thence through Penn Yan, Watkins, Elmira, Williamsport, Harrisburg, to Philadelphia; distance, 345 miles; total distance, 442 miles. Also making connections for Baltimore, a total distance of 401 miles, and for Washington, a total distance of 442 miles from Buffalo.

(4) *Lehigh Valley Railroad.*—Connects with the New York, Lake Erie and Western or the New York Central and the Northern Central at Elmira, say from Buffalo to Elmira, 149 miles; thence to Waverly, Towanda, Wilkes Barre, Mauch Chunk, Allentown, Bethlehem, Easton, Metuchen, Elizabeth, Newark, to New York; total distance, 453 miles.

(5) *The narrow-gauge system of the oil regions of Pennsylvania.*—These important feeders connect with Buffalo by way of the Buffalo, New York and Philadelphia Railroad; the New York, Lake Erie and Western Railroad; the Buffalo, Rochester and Pittsburgh Railroad; and many other railroads too numerous to mention without going into minute details of routes, distances, &c.

(6) *The New York, Chicago and Saint Louis Railroad (the Nickel Plate).*—From Buffalo, through Dunkirk, Erie, Conneaut, Ashtabula, Cleveland, to Bellevue; distance 248 miles; thence through Fostoria, Fort Wayne, Valparaiso, to Chicago; total distance, 524 miles.

(7) *Lake Shore and Michigan Southern Railroad.*—From Buffalo, through Dunkirk, Erie, Ashtabula, Cleveland, Sandusky, Fremont, Toledo, Adrian, Elkhart, La Porte, to Chicago; distance, 540 miles.

(8) *Buffalo, Rochester and Pittsburgh Railroad.*—At present runs from Rochester to Bradford, a distance of 126 miles; from Bradford to Du Bois, a distance of 73 miles; total distance 199 miles. At Du Bois it connects with the low-grade Allegheny Valley Railroad, which takes the cars to Pittsburgh. In a few weeks the Buffalo division of this railroad will be completed and in operation; distance to Bradford 80 miles; thence to Du Bois, 73 miles; total distance, 153 miles. It will be a valuable addition to our railroad system.

(9) *Buffalo, Pittsburgh and Western Railroad.*—From Buffalo, through Dunkirk, Brocton, Mayville, Sherman, Corry, Titusville, to Oil City; distance, 138 miles; thence by the Allegheny Valley Railroad to Pittsburgh, 132 miles; total distance, 270 miles.

(10) *Delaware, Lackawanna and Western Railroad.*—From Buffalo, through Mount Morris, Dansville, Bath, Corning, Elmira, Waverly, Owego, Binghamton, Scranton, Portland, Manunka Chunck, Washington, Boonton, Paterson, Hoboken, to New York; distance, 409 miles.

(11) *New York, West Shore and Buffalo Railroad.*—Was opened June 4, 1883, from New York, through Jersey City, Haverstraw, West Point, Cornwall to Newburg. The remainder of the road is now under construction and will soon be finished from that point to Buffalo; distance, about 420 miles.

(12) *Buffalo, New York and Philadelphia Railroad.*—From Buffalo, through Arcade, Machias, Olean, Eldred, Larabee, Port Allegheny, to Emporium; distance, 121 miles; thence cars run over the Pennsylvania Railroad to New York, 387 miles; total distance, 508 miles. (The distance by this route to Philadelphia is 418 miles; to Baltimore, 401 miles, and to Washington, 443 miles.)

(13) *Michigan Central Railroad.*—From Buffalo, through Saint Thomas and Amherstburg, Canada, to Detroit; distance, 236 miles; thence to Toledo and Chicago; total distance, 534 miles.

(14) *Grand Trunk Railroad of Canada.*—From Buffalo, through Brantford, Stratford, Sarnia, Port Huron, to Detroit; distance, 258 miles. From Buffalo, through Saint Catharines, Hamilton, Paris, London, Windsor, to Detroit; distance, 230 miles. (The distance from Detroit to Chicago is 284 miles.) From Buffalo, through Saint Catharines, Hamilton, to Toronto; distance 81 miles. This railroad connects with points almost innumerable all through Canada, as will be seen by reference to the Railway Guide.

Most of foregoing mentioned railroads have connection with the systems of Michi-

gan, Illinois, Indiana, Wisconsin, Minnesota, Iowa, &c., and the Northern Pacific Railroad; also some to Southern points.

The agents of the following coal companies have offices at Buffalo to sell the product of their respective mines, included in which are the Pittston, Kingston, Wilkesbarre, Lehigh, Wyoming, Schuylkill, Shamokin, Lykens Valley, Scranton, and Lackawanna; also the Youghiogheny cannel, the Blossburg and the Loyalsock, and all the well-known bituminous coals too numerous to mention in detail, viz, the Delaware and Hudson Canal Company, the Clearfield Coal Company, the Pennsylvania Coal Company, the McIntyre Coal Company, the Fall Brook Coal Company, the Morris Run Coal Mining Company, the Blossburg Coal Company, the Lehigh Valley Coal Company, the Delaware and Lackawanna Coal Company, the Rochester mines, of Du Bois, Pa., the Buffalo Coal Company, the Philadelphia and Reading Coal and Iron Company, and the Hillside Coal and Iron Company.

Coke is also sold here in large quantities from the Connellsville and Clearfield districts, Pennsylvania, for the use of blast and smelting furnaces.

Five of the railroads finished and the one now under construction penetrate into that section of the bituminous coal regions of Western Pennsylvania which are underlaid with the best qualities of that variety of coal. They have stocked our market to overflowing with their products and given us cheap fuel, to the great advantage of our manufacturing and steamboat interests. Large quantities are shipped hence by the Erie Canal to places along its line, to tide-water, and to New York and parts adjacent.

It is thus seen that we have most of the great coal corporations, controlling the immense product of the anthracite regions of Pennsylvania, using their own and other railroads to bring many thousands of tons to Buffalo to supply our domestic requirements and the vessels which take this fuel to merchants at all ports on Lakes Erie, Huron, Michigan, and Superior for distribution to consumers of the West and Northwest, as well as by railroads to other places in the United States and to all points in the Dominion of Canada.

The following statement from my "Five minutes' talk about Buffalo," shows the anthracite and bituminous coal trade of this city for the past three years:

Coal.	1880.	1881.	1882.
Imports by canal.			
Anthracite.....tons..	83,240	181,292	233,004
Blossburg.....do...	1,777	500	.....
Exports by canal.			
Bituminous.....do...	25,361	29,222	25,276
Imports by lake.			
Bituminous.....do...	13,078	7,860	8,800
Exports by lake.			
Anthracite.....do...	554,670	795,240	995,500
Blossburg.....do...	35,000	30,000	32,000
*Imports by railroads.**			
Anthracite.....do...	850,000	1,065,000	1,700,000
Bituminous.....do...	800,000	923,919	1,024,900
Blossburg.....do...	62,000	65,000	65,000
Exports by railroads.			
(No estimate to hand of the movement in detail.)			
Recapitulation.			
Total imports, anthracite.....tons..	933,240	1,246,292	1,933,004
Total imports, bituminous.....do...	813,078	931,779	1,633,787
Total imports, Blossburg.....do...	66,777	65,500	65,000
Total exports, bituminous.....do...	25,361	29,222	25,276
Total exports, anthracite.....do...	554,670	795,240	995,500
Total exports, Blossburg.....do...	35,000	30,000	32,000

*Partly estimated.

The railroad freights which now prevail from Buffalo East are as follows:

To New York, Boston, and Philadelphia.—Wheat 7¼ cents, corn 7¼ cents, and oats 4½ cents per bushel; flour, 24 cents per barrel, or 13 cents per 100 pounds; grain, 13 cents per 100 pounds.

To Albany.—Grain, 11½ cents per 100 pounds.

To Boston and New England points.—Grain, 17½ cents per 100 pounds.

The following is a list of the fast freight lines operating over the several railroads mentioned before in this communication; their starting points are principally from the several Western States: Blue Line, Canada Southern Line, Commercial Express Line, Empire Line, Erie Dispatch, Erie and North Shore Dispatch, Red Line Transit, South Shore Line, White Line, and Lackawanna Line.

The newly discovered salt basin in Wyoming County, New York, bids fair to effect the importation of English soda ash to this country. Buffalo, distant only 36 miles by railroad, will be its point of shipment to the West of the salt and soda ash.

The only railroad making a statement of its business to and through this port is the Lake Shore and Michigan Southern Railroad. The following is the exhibit for three years:

Statement showing the principal receipts at Buffalo by the Lake Shore and Michigan Southern Railroad, for the year ending December 30, 1882, *as compared with those of* 1881 *and* 1880:

Articles.	1880.	1881.	1882.
Flour ..... barrels..	925,100	889,800	690,390
Wheat ..... bushels..	11,084,000	8,343,400	9,499,800
Corn ..... do....	13,949,400	16,731,200	13,274,900
Oats ..... do....	6,905,000	5,409,000	3,407,800
Barley ..... do....	710,800	235,800	236,000
Rye ..... do....	913,600	340,000	408,400
Total grain ..... do....	33,562,300	31,059,400	26,827,800
Flour to wheat ..... do....	4,625,500	4,449,000	3,451,950
Grand total ..... do....	38,187,800	35,508,400	30,279,750
Beef ..... barrels and tierces..	124,920	79,510	76,500
Butter ..... pounds..	30,210,000	20,100,000	18,290,000
Bacon ..... do....	38,530,000	31,950,000	25,280,000
Broomcorn ..... bales..	12,690	14,895	13,456
Coal ..... tons..	75,721	88,949	46,935
Cattle ..... cars..	38,413	30,799	26,037
Cheese ..... boxes..	130,150	85,860	66,219
Cotton ..... bales..	96,000	73,950	67,665
Cornmeal ..... barrels..	254,100	242,000	178,635
Eggs ..... packages..	32,030	35,745	19,370
Fish ..... do....	26,725	16,950	18,545
Grindstones ..... number..	37,210	23,970	23,140
Hides ..... do	289,905	304,533	340,580
Horses ..... cars..	1,015	830	746
Hops ..... bales..	555	1,295	765
Hogs ..... cars..	15,381	14,369	14,298
Hemp ..... bales..	6,871	6,080	5,795
Hams ..... tierces..	204,590	108,500	89,250
Iron, plates ..... number..	29,120	23,920	26,345
Iron, pig ..... tons..	6,620	7,720	7,672
Leather ..... rolls..	10,760	6,016	12,265
Lard ..... pounds..	49,100,000	28,800,000	27,780,000
Lumber ..... cars..	4,670	5,073	4,576
Oil cake ..... packages..	201,160	128,370	107,540
Oil, refined ..... barrels..	499,660	445,760	505,055
Oil, crude ..... do....	452,571	497,240	547,535
Pork ..... do....	233,200	201,140	125,500
Pelts ..... do....	16,355	12,950	7,200
Seed ..... bags..	66,590	51,180	47,790
Stones ..... tons..	9,536	7,624	6,989
Staves ..... cars..	814	921	701
Sheep ..... do....	3,367	3,466	5,018
Tobacco ..... packages..	35,292	29,980	27,900
Tobacco ..... hogsheads..	5,378	5,224	3,534
Tallow ..... barrels or packages..	10,050	11,630	12,080
Tanbark ..... cars..	686	677	493
Whisky ..... barrels..	81,200	70,900	67,400
Wool ..... bales..	35,440	26,090	32,990

Of the above receipts for 1880, 1881, and 1882 the following were for this city:

Articles.	1880.	1881.	1882.
Flour ..... barrels..	20,700	31,500	11,7
Wheat ..... bushels..	46,400	50,400	126,5
Corn ..... do....	176,800	1,150,100	1,783,8
Oats ..... do....	34,200	82,100	67,2
Barley ..... do....	64,000	6,400	29,0
Rye ..... do....	1,600	400	7,5
Hides ..... number..	95,595	117,283	114,4
Fish ..... packages..	4,720	4,804	2,5
Lumber ..... cars..	2,182	2,211	1,8
Oil, refined ..... barrels..	17,120	2,880	4,0
Coal ..... tons..	58,696	66,549	30,4

The exports of grain from the railroad elevators of this city for the past ten year is thus shown:

Statement showing the exports of grain from the elevators of Buffalo by the several rai roads for the months of—

1882.	Wheat.	Corn.	Oats.	Barley.	Rye.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushe*
January	98,026	15,200	9,050	13,980	.....
February	68,452	9,138	.....	28,100	.....
March	94,789	2,820	.....	36,201	.....
April	280,304	483,803	.....	8,600	.....
May	279,834	784,345	50,354	6,308	
June	534,633	814,603	12,644	.....	....
July	453,816	898,159	91,311	.....	
August	912,197	878,409	84,453	.....	....
September	672,460	850,175	284,574	.....	...
October	266,142	892,516	295,495	19,034	...
November	231,283	1,181,794	24,963	12,000	
December	492,714	1,205,239	.....	.....	
Total 1882	4,384,650	7,816,201	852,754	124,223	
Total 1881	4,862,973	15,265,794	1,588,068	57,521	
Total 1880	9,677,469	20,319,376	469,689	32,960	
Total 1879	8,575,129	7,369,007	188,329	94,230	
Total 1878	9,173,439	9,300,650	254,057	185,212	
Total 1877	9,323,348	3,854,034	620,009	348,082	
Total 1876	5,984,722	6,581,929	715,649	112,741	
Total 1875	6,198,393	6,436,717	1,091,327	60,437	
Total 1874	4,658,080	5,209,202	1,318,097	191,277	
Total 1873	4,421,554	4,033,152	1,336,633	312,526	

GRAND TOTAL.

Bushels.	1878
194,605	

As a terminal station for freight Buffalo ranks very high in point of degree. It ıst be remembered that it is the great terminus of lake navigation and the point transhipment of millions of bushels of grain annually from vessels to canal boats d cars; of many thousands of barrels and sacks of flour to cars; that provisions, e stock, &c., arrive and pass through it on the great trunk lines in large quantities, d that every year witnesses a vast increase in the amount of anthracite coal shipped m its wharves to the West and Northwest and by railroads to the Dominion of nada. Facts innumerable can be found to prove its advantages as a terminal int. The number of railroads now centering here shows the importance of its ıffic. The miles of side and yard tracks of these lines are numbered by the hundreds, arly all within the city limits. The wharves or docks, yards and elevators owned these railroads are valued up in the millions of dollars, and cover a large extent territory on the river front as well as the Blackwell Canal, the Erie and Ohio basins, :. Other terminal facilities of very large scope and proportions are being pro-ıed on the Pitt farm lands and other parts of our harbor for the steadily increas-g traffic in coal, grain, lumber, &c.

The following paragraph, taken from "Five Minutes' Talk about Buffalo," thus mmarizes the terminal facilities with especial reference to the elevating interests our port, and briefly describes the elevators:

"Buffalo ranks as the third city in the State, but in commercial importance she ust be deemed second only to the metropolis. It is no wonder that her citizens are oud of her position and manifold advantages. With very few equals in the world a grain port, its terminal facilities are very extensive and complete. Grain is re-ived, transferred, stored, and forwarded with greater dispatch than at any other ort in this country. The river for about a mile from its mouth is lined with im-ense elevators and floaters, provided with all of the most improved appliances for ındling cereals. The transfer of grain cargoes from vessels into storehouses and nal boats prior to 1843 was done by manual labor, being raised from the hold in bs and bags. In that year Mr. Joseph Dart erected the first elevator ever built for ›ring and transferring grain, with a storage capacity of 55,000 bushels and a trans- capacity of 15,000 bushels per day, near the mouth of Buffalo River. Now there › 22 elevators, 8 transfer elevators, and 6 floaters, 36 in all, most of which are assive structures, costing in the aggregate about $6,000,000. Their combined stor-› capacity reaches 8,000,000 bushels, while their daily transfer capacity is 3,200,000 ıshels. That is to say, the elevators of Buffalo are capable of receiving from lake sels and transferring to canal boats and cars nearly 3,200,000 bushels of grain every enty-four hours. Much has been said and written against these Buffalo elevators, the fact that they furnish such excellent facilities to carriers and shippers, in-ing quick dispatch and freedom from costly delays, is an advantage that can be rcely overestimated. These elevators are owned by private individuals, excepting t the New York Central and Hudson River Railroad corporation owns two of the gest, and the New York, Lake Erie and Western Railroad one. Several of these vators have machinery attached whereby 60,000 to 70,000 bushels of wet or dam-d grain can be dried every twenty-four hours. The grain trade has steadily in-ased for years. The season's receipts of 1880 were the largest on record, aggregat-; by lake and rail 175,000,000 bushels, last year 122,571,295 bushels. The facilities forwarding this vast amount of grain were as extensive as the terminal facilities. e capacity of the canal has never been fully tested, and the shipments of 1880, which re the largest ever reported, and reached 72,000,000 bushels, were forwarded with little effort as the 36,000,000 bushels shipped in 1875. This fact is accounted for the deepening and improvement of the canal so as to permit of the passage of boats th increased speed. The total of all articles carried from Buffalo in 1880, aggregated 186,922 tons of the value of $59,539,048, and in 1881, 1,121,240 tons valued at 4,782,568. The canal and railway competition thus afforded always insures cheap ınsportation rates. The New York Central, the New York, Lake Erie and Western, d the Buffalo, New York and Philadelphia Railroads give much attention to con-ying grain, and each moves large quantities received by lake as well as its through ipments. Their tracks run directly into the elevators, so that there is no carting ıd no handling outside of the elevator. It is no uncommon thing to see a large lake ssel being unloaded and two canal boats and two trains of freight cars being loaded the same time. The number of miles of railroad owned and leased by the different mpanies now entering the city aggregates 9,372; to this statement should be added e narrow-gauge lines through the oil regions of Pennsylvania and at other points ıich connect with them."

This was written in January, 1882, and since then the elevator and terminal facili-›s have been materially improved and the latter largely increased.

The numerous transportation lines by lake and railroad are well supplied with ›ight from our local manufacturing and other industrial interests, which are numer-s and much *diversified, as the* following partial list shows:

Manufacturing and industrial interests of Buffalo.—Flour mills, tanneries, car-wheel foundries, blast furnaces, rolling mills, iron bridges, agricultural implements, flour mills, furnishing goods and machinery, ship and canal-boat building, iron ship-building, iron foundries and forges, chemical works, car-building (railroad), bricks and fire-bricks, planing, door, and sash mills, fertilizer works, stoves and furnaces, distilleries, tobacco and cigar manufactories, dry-docks (4), bolt and screw works, breweries, printing, engraving, and book-binding, steam engine works, boiler works, boots and shoes, clothing, shirts, &c.. wool, hides, and leather, petroleum refineries, edge tools and cutlery, scales of all kinds, carriages, &c., white lead mills, flax-seed oil mills, lead pipe, fruit canning and preserving, manufacture of jewelry, chains of all kinds, furniture of all kinds, railroad machinery, pianos, melodeons, wall paper, fringes, &c., medicines, perfumes, and flavoring extracts, lithographing, envelopes, and paper bags, starch, trunks, satchels, &c., refrigerators and ice-chests, water-mains and gas-pipes, notions of all kinds, glass-staining, gloves and mittens, iron chains and cables, malting, vinegar, lime, cement, &c., bakeries (crackers and cake), confectionery, glucose, sirups, &c., potteries, water-filters, soap, bird-cages, picture-frames, mirrors, &c., children's carriages, &c.

The amount of capital invested in manufactures of all kinds is estimated at $35,000,000; the annual value of the products $55,000,000; the number of hands employed about 27,500.

This statement would be incomplete if no reference were made to the cattle trade, a railroad transportation interest of great magnitude. The yards at East Buffalo cover nearly 60 acres of land, and are to be enlarged soon. They are well paved and provided with requisite sheds to protect stock from the weather, and chutes for loading and unloading the cattle. The following table shows the trade from 1857 to date, compiled from official sources:

Years.	Cattle.	Hogs.	Sheep.	Horses.	Years.	Cattle.	Hogs.	Sheep.	Horses.
	Head.	*Head.*	*Head.*	*Head.*		*Head.*	*Head.*	*Head.*	*Head.*
1857....	108, 203	117, 168	307, 549	.... ..	1870...	3?8, 057	739, 519	561, 447	7, [illegible]
1858....	134, 073	92, 194	345, 731	.. ....	1871..	384, 294	886, 014	551, 131	13, [illegible]
1859...	103, 337	73, 619	189, 579	.....	1872...	379, 086	1, 145, 109	606, 748	20, [illegible]
1860....	156, 972	85, 770	145, 354	.....	1873...	409, 738	1, 662, 500	733, 400	28, [illegible]
1861....	141, 921	101, 679	238, 952	.....	1874 ..	504, 594	1, 431, 800	783, 800	21, [illegible]
1862....	129, 433	103, 671	524, 976	.....	1875...	513, 530	1, 067, 300	841, 000	18, [illegible]
1863....	154, 789	92, 128	474, 849	.....	1876...	615, 790	1, 150, 210	871, 928	12, [illegible]
1864....	135, 797	301, 629	155, 959	.....	1877...	569, 915	1, 128, 770	763, 600	12, [illegible]
1865....	212, 839	300, 014	207, 208	.....	1878...	657, 809	2, 063, 765	1, 032, 225	13, [illegible]
1866....	275, 091	552, 831	341, 560	.....	1879...	633, 556	1, 916, 015	1, 019, 600	20, [illegible]
1867....	257, 872	697, 440	239, 943	.....	1880...	786, 3?6	2, 251, 815	1, 033, 200	20, [illegible]
1868....	265, 105	470, 578	3?5, 815	7, 773	1881...	738, 900	2, 096, 325	1, 113, 350	17, [illegible]
1869....	347, 871	794, 272	381, 450	12, 038	1882...	630, 955	1, 965, 350	1, 460, 000	17, [illegible]

The estimated number of cattle, hogs, and sheep slaughtered at the East Buffalo yards and by city butchers for the last nine years is reported as follows:

Years.	Cattle.	Hogs.	Sheep.	Years.	Cattle.	Hogs.	Sheep.
	Head.	*Head.*	*Head.*		*Head.*	*Head.*	*Head.*
1874.....	35, 073	173, 300	96, 800	1879.....	23, 511	310, 845	87, [illegible]
1875.....	19, 956	159, 500	118, 200	1880.....	28, 000	406, 295	88, [illegible]
1876.....	25, 651	208, 560	103, 678	1881.....	35, 845	443, 100	98, [illegible]
1877.....	20, 158	171, 000	47, 500	1882.....	35, 547	406, 180	196, [illegible]
1878.....	53, 025	387, 210	175, 265				

As nearly all the money received at the custom-house is from duties on produce coming to Buffalo by railroad over the International Suspension Bridge, and from bonded sea-board cars of merchandise from the East, the following statement is appropriate:

Custom-house receipts at the port of Buffalo each month and total for the year 1882, as compared with the two years preceding:

Months.	1880.	1881.	1882.
January	$46,339 33	$64,418 16	$67,137 42
February	67,361 43	56,224 32	98,175 50
March	66,938 92	69,842 71	125,940 12
April	59,824 92	65,372 79	99,483 16
May	47,680 00	65,162 27	76,586 24
June	43,169 74	56,124 66	52,009 18
July	39,530 54	35,513 87	62,124 73
August	62,116 89	61,130 08	69,394 18
September	65,220 94	61,391 28	70,929 64
October	90,456 73	78,326 32	119,718 22
November	92,308 04	128,073 51	121,350 42
December	87,159 00	71,336 65	69,034 21
Total year	768,106 48	812,916 92	1,031,883 02

BUFFALO ELEVATING AND STORAGE RATES.

Inquiries are frequently made relative to the elevating and storage rates at the port of Buffalo. At an expenditure of considerable labor the following statement, extending over a period of thirty years, is submitted as being as near correct as could be obtained from records or "word of mouth" information:

Years.	Charge to grain.	Charge to vessels.	No. of days' storage.
	Cents.	*Cents.*	
1855 and 1856*	1½	¼	5
1857 to 1860*	¼	¼	5
1861	¼	¼	5
1862 to 1864	¼	¼	5
1865 and 1866	1½	¼	10
1867 and 1868	1½	¼	20
1869	1¼	¼	10
1870	1	¼	10
1871	1	¼	5
1872 and 1873†	‡1	¼	5
1874	1	¼	10
1875 and 1876†	‡½ to ⅞	⅛	5
1877	⅜	⅛	5
1878†	¼ to ⅜	⅛	5
1879†	⅛ to ¼	⅛	5
1880 and 1881†	⅛ to ¼	⅛	5
1882†	§⅜	⅛	5
1883 and 1884	¼	⅛	5

* Estimated—Elevators running wild greater part of the year. No records kept; figures obtained from old residents in the grain and vessel interests.
† Running wild part of the year.
‡ About.
§ Average.

NIAGARA SHIP-CANAL.

The Niagara Ship-Canal scheme was first propounded in 1782 apparently, a survey being made at that time for the purpose of forming a navigable route from Lake Erie to New York City, via Albany or Troy, and the Hudson River.

In 1808 the legislature of this State ordered a survey to be made, which was done by Mr. James Geddes, civil engineer, around the Falls of Niagara, from Schlosser to Lewiston. In 1835 the United States Government ordered a survey, and in 1853 another was undertaken, and five different lines or routes were reported upon between Niagara River and Lake Ontario; the average cost of the five lines surveyed was about $6,000,000 with single locks, and $7,550,000 with double locks; each of the canals was to be 160 feet wide at water surface, 14 feet deep, with locks 300 by 70 feet, having an average lockage lift of 15½ feet; the average length of the canals, 8 miles 428 feet. The cost of the line from Schlosser to Lewiston, 8 miles (including the deepening of the harbor to 14 feet), was estimated at over $10,000,000 with single and $13,000,000 with double locks. Mr. Elmore H. Walker, of New York, said, in

1872: "At the present cost of labor and material, a canal of the dimensions proposed in the last survey would cost $25,000,000, and for commercial purposes it will be more economical to pay tolls on the Welland Canal than to pay $25,000,000 for the construction of this canal, and a further large sum for its maintenance and repair after being brought into use for commerce."

At the convention of commercial bodies of the United States and Canada, held at Detroit, Mich., July 11 to 14, 1865, among other preambles and resolutions, the following were adopted:

"Whereas, the annual increase of the productions of the States bordering upon and tributary to the northern lakes has exceeded the capacity of transportation of all the avenues to the Atlantic, demonstrating the urgent necessity of enlarged water facilities for communication between the West and the East; and

Whereas, the canals and various lines of railroad leading to and from said lakes, while they have contributed vastly to develop the resources, increase the wealth, and promote the permanent union of our whole country, are wholly inadequate to the demands of the immense and rapidly growing commerce: Therefore,

Resolved, That this convention regard the construction of a ship-canal around the Falls of Niagara a national work of great commercial importance, alike demanded by the necessities of commerce and political wisdom, and that its early completion by the General Government is required by every consideration of sound political economy.

"*Resolved*, That such a canal, of a capacity to pass the largest steam or sail vessels, which now or hereafter may navigate the lakes, will afford the cheapest and most expeditious water communication for the transportation of products of the great producing regions of the West and Northwest, by bringing into use the most easterly of the entire chain of lakes on our northern frontier, from which these annually increasing products may be distributed by short, enlarged canals, and by railway, to the Hudson and New York, by sailing into New England and Pennsylvania, and by the Saint Lawrence River direct to the ocean.

"*Resolved*, That the State of New York, geographically located on the highway of commerce between the great chain of lakes to the sea-board, and having within her borders the metropolis of the nation, is bound by every consideration of interest and true policy, and by the comity she owes her sister States, to improve and enlarge the shortest water communication between the lakes and tide-water. Failing to do so, she must not complain if a portion of her great inland commerce shall be directed through other cheaper canals and communications.

"*Resolved*, That we hail with satisfaction the proposed enlargement of the Welland and Saint Lawrence Canals, and other proposed improvements through the provinces, affording other cheap outlets through which the commerce of the States tributary to the lakes may seek our eastern markets, as well as the markets of the Old World."

At the same convention, Mr. Bloodgood, of New York, presented statistics and made an elaborate speech in favor of constructing a ship-canal from the Saint Lawrence to the Hudson, recommending what was known as the Caughnawaga route, with a capacity for the navigation of vessels of from five to seven hundred tons.

In the winter of 1865 the question of a Niagara ship-canal was brought before Congress, and Buffalo opposed it very strongly. Joint resolutions of the Senate and Assembly of the State of New York were also passed upon the recommendation of the merchants of Buffalo, against the scheme. The bill was killed in committee.

Oswego always claimed that, as before the days of Clinton and the Erie Canal, the commerce between the East and the West found its way up the Hudson River to Troy, and along the Mohawk, and, with a little help overland, down the Oswego River to Lake Ontario. Then it was conveyed in bateaus up the lake to Niagara Falls, the great barrier Nature interposed between the lower and upper lakes. Then the back of the poor Indian came into use over the portage around the falls until the Lake Erie vessels took it from his shoulders. Oswego thought it of the utmost importance that our citizens should go back to that route as being the best and cheapest that could be opened up between the sea-board and the West.

It was further claimed that as a great portion of the Erie Canal had been stretched along parallel with the south shore of the lake, at an average distance of about 14 miles, trade had been diverted from its natural highway. The distance from Buffalo to Albany was 345 miles, and New York State levied a canal toll per mile upon every ton of merchandise transported, and it was proposed to remove the barrier interposed upon trade by the Falls of Niagara by a ship-canal, and thus bring the produce of the West down to within 160 miles of tide-water at New York without breaking bulk, thereby reducing the tolls imposed by the State of New York one-half, making a reduction of 3 cents per bushel in the cost of transportation. With the aid of the ship-canal, too, it was proposed to float down vessels of 1,000 to 1,500 tons burden to Lake Ontario, laden with the grain of the Great West, all the way from Lakes Michigan *and Superior*. It was claimed that this would still further reduce transportation 2

cents per bushel, making a total deduction of 5 cents, and render the products of the West proportionately more valuable.

The ship canal was a topic of great interest among commercial bodies in this and other States, but about 1869 commenced the discussion relative to canal matters, which eventually was the cause of its going into oblivion. The questions of the contract system, the management of, and also of the enlargement and making free the canals of this State, became important subjects for consideration. Meetings of boards of trade and chambers of commerce were frequently held, and all points were well ventilated.

At the meeting of the National Board of Trade held at Richmond, Va., December, 1869, a resolution was adopted, calling the attention of Congress to the necessity of a ship-canal around the Falls of Niagara.

On the 13th December, 1871, a commercial convention was held at Detroit relative to the ship-canal project. The Buffalo Board of Trade declined to send delegates, but in lieu thereof presented an elaborate report of a committee which had been appointed. The salient points of the report were as follows:

"After many legislative vicissitudes, two years ago the legislature of this State passed unanimously an act to submit to the people an amendment to the constitution, which directed the proper authorities to fund the canal debt and reduce the tolls to the minimum point of maintenance of the canals and a small sinking fund to pay the extended canal debt. Practically this would have given to the country a free canal to-day! Insidious and malign influences prevented the printing and circulation of the free canal ballots in the interior of the State, and 180,000 voters were thus debarred from voting for this measure and a minority vote secured its defeat. The popular expression, as fairly interpreted as the result of this election, of the city of New York and river counties of 100,000 majority in favor of it, and the almost unanimous votes of all the commercial counties, accompanied by the fact that both the political parties in their recent State conventions placed the free canal policy as a plank in their platforms, leaves no room for a doubt that as soon as the conditions of the constitution can be complied with, another amendment to the constitution will be submitted and adopted unanimously. The unanimous passage of the free canal funding bill by the legislature was accepted by the canal board as a mandate to reduce the tolls, and they were reduced 50 per cent. Thus the policy of low tolls and a free canal has been inaugurated, and this coming year they will be reduced 25 per cent. more. With a free canal, its channel being improved and strengthened, and steam used as a motive power, as it has been for the last four years upon all important canals in Europe, 150,000,000 bushels of grain can be passed over our canal, furnishing the cheapest transportation that can be found in this or any other country. This crowning act in our State policy would be dedicating to the use of the people of these United States public works which have cost over $100,000,000, and part of it paid from taxation of our people.

"The 'continental enterprise' (so called by you), presented to us embraces a Niagara ship-canal around the Falls on the American side, thence through Lake Ontario and through the Canadian canals made to pass the Rapids of the Saint Lawrence, thence to Montreal, thence through another Canadian ship canal, commencing at the mouth of the Sorel, 50 miles below Montreal, to Lake Champlain, and from thence by another ship-canal to the deep waters of the Hudson below Albany. This scheme may be described as follows:

"The distance from Montreal to New York via the Saint Lawrence and Sorel Rivers, Lake Champlain, the Champlain Canal, and the Hudson River is over 500 miles.

"From Buffalo to New York, via the canal and the Hudson, the distance is 500 miles.

"The lockage is less by the Erie Canal route, for the *up* lockage in the Sorel is avoided, and the *down* lockage to the Hudson, &c. The distance lost in shipping property to Liverpool, via Montreal and New York, is the distance from Lake Erie to Montreal, over 600 miles. So, of course, Liverpool and European bound property, once at Montreal, would go down the Saint Lawrence and over the sea, thus effecting a saving of 700 miles.

"Grain can be transferred here into canal-boats for one-half cent per bushel. Can a vessel carry grain from Lake Erie to Montreal for that sum, even admitting that a transfer would not be necessary at Kingston, which would be necessary until the Saint Lawrence canals are enlarged and deepened, as three-fourths of the grain is now transferred into barges?

"Our lateral canals, by increasing the business of the Erie Canal, have contributed a fair share towards paying off the canal debt. Our northern canals have always paid; our southern canals, when completed to the coal-beds of Pennsylvania, will be among our most useful canals in cheapening the transit of its coal, in which our lake States are so deeply interested. Although all the coal may not pass over them, they will fix the freight tariff for coal over railroads, the same as the Erie Canal regulates the *freight tariff on the* transit of breadstuffs, and even save, to some extent, the peo-

of Pennsylvania from the consequences of their folly in selling their canals to the ilways.

"If desirable, the State or National Government can make the Erie Canal as commodious as the proposed canals in this 'continental enterprise' leading from Montreal to New York, and with less money, and this would be no experiment."

The attitude, commercial condition, and objects of Canada were plainly expressed by the leading minister, Hon. Mr. Galt, who said in a speech: "We have no trade ourselves which would require the enlargement of our canals; no trade that should justify us in enlarging them; we could only be repaid for such improvements by obtaining the American States' trade, and *making it pay tolls* or otherwise contribute to our revenues."

In conclusion, the report states that "entertaining these views, which we have expressed as concisely as possible, and at the same time explained our position as citizens of the State, we must protest against the right of the General Government to construct any public works upon our soil without the consent of the people of the State; and above all to construct a *British ship-canal* upon our territory—a monument of our State imbecility and folly."

The following resolutions were appended to the report, and were, as well as the report, unanimously approved by the members of the board:

"*Resolved*, That this Board of Trade views with deep interest all projects of internal improvement for developing the resources of the country, and for cheapening and facilitating the transportation of its agricultural, mining, and manufacturing products to remunerative markets.

"*Resolved*, That while the proposed Niagara ship-canal may become a possible necessity in the future, observation and experience have demonstrated that the commerce of the country does not require a work of this character; and, if already completed, would not tend to lessen the cost of transportation or cheapen the price of Western products to the consumers of our Eastern States.

"*Resolved*, That, in the opinion of this board, it is inexpedient at this juncture of the nation's financial condition to appeal to its already exhausted Treasury for aid in constructing a work which evidently would be greatly to the commercial interest of a foreign nation, and result in diverting traffic from American channels and home markets.

"*Resolved*, That the system of cheap transportation inaugurated by the State of New York in constructing the Erie Canal in 1825, at great cost, and the enlargement in 1852 at still greater cost, and the late policy, adopted in 1870, of low tolls, together with liberal rewards for the best modes of steam propulsion for canal-boats, is good evidence that the people of this State, appreciating the commercial necessities of the country, are determined, by wise legislation, to foster and encourage the commerce of the Erie Canal, and to establish cheap, reliable, and speedy transportation, and, by still further reduction of tolls, to make as near a free channel as the cost of superintendence and repairs will permit.

"*Resolved*, That the Erie Canal, since its construction, has been the cheapest medium of transportation and the only direct water highway for a national commerce between the Western and Eastern States, encouraging thereby the settlement of vast uncultivated territories, which have become prosperous producing States; and as this canal has now become like a powerful balance-wheel, in checking and regulating the price of transportation between the producing and consuming States, it is for the interes of the great producing States at the West, which have reaped such inestimable ben fits from the Erie Canal, and also of the consuming States at the East, to whom che food is desirable, to encourage the improvement and enlargement of the Erie Ca to its utmost capacity, so that it may be made what its originators intended, a f national highway.

"*Resolved*, That, in view of previous Niagara ship-canal conventions, where project has been thoroughly and ably discussed, and in view of the disfavor which it has been repeatedly received by the Congress of the United States, this cannot but look upon the agitation of this subject not only as premature and ill-t but as savoring strongly of local and foreign interests, and therefore must respec decline appointing delegates to the Detroit convention."

In the State legislature of 1872 a bill was introduced in favor of constructing canal around the Falls of Niagara. A committee from the Board of Trade of went to Albany to protest against it, and appeared before a joint committe legislature, claiming that the Niagara ship-canal enterprise was projected, been persistently fostered by interests antagonistic to the commercial welfa State of New York, and the revenues of its public works. That the perso senting those interests were now seeking to obtain the approval and indor the State to their project by the passage of the act now before the legislatu for the General Government to obtain the rights of eminent for the purpose of securing a record in this State, and assurance for large appropriations from t

Treasury for constructing a channel to divert the traffic of the West and Northwest from our home markets to foreign waters. The committee protested against the policy of encouraging the construction of a work so unnecessary at that time, and one evidently so largely in the interest of a foreign nation as well as of individuals. In conclusion, the committee urged that the legislature should defeat the bill, and in lieu, inaugurate a system of enlarged locks on the canals of the State, and a liberal policy of management, with lower tolls, to meet the imperative demands of commerce. The result of this final attempt at legislating for a ship-canal was thas recorded on March 1, 1872, "Enacting clause of the Niagara ship-canal bill struck out."

This was the last public action in the State of New York as far as any records to hand show. The enlargement of the canals, the questions of low tolls, and the abolition of tolls, and other kindred subjects, from that time became the all-absorbing topics of commercial discussion—the Niagara ship-canal was heard of no more!

OSWEGO VERSUS BUFFALO.

The conflict or struggle between Oswego and Buffalo may be briefly summarized, although its interesting points might fill a volume. Each city was desirous of obtaining the whole or the greater portion of the commerce of the western lakes. Oswego was anxious for the enlargement of the Welland Canal, and also for the construction of a ship-canal around Niagara Falls, expecting that Buffalo would be given the go-by by vessels, and that their cargoes would be transferred at Oswego, thereby decreasing the mileage of canal transportation and augmenting the commerce of that port with all the profits attached thereto.

Buffalo, of course, was desirous of retaining and adding to her commerce, and conclusively showed the absurdity of constructing a canal around Niagara Falls, and further proved that from her position with regard to the coal-fields of Pennsylvania, Buffalo was the proper point for vessels to discharge their western cargoes, as they could return with coal (instead of taking sand for ballast, as was done in days gone by) at a fair profit, thereby reducing the cost of transportation. In the olden time the freight charges on grain down to Buffalo had to be large enough to enable the vessel to return light, or else there would be no profit to the owners. Business is now so arranged that freight on coal from Buffalo to the West pays better, as a rule, than grain from the West to Buffalo.

The evidence presented by the commerce of Buffalo to-day shows that the arguments in favor of that port were correct. She has grown in magnitude, not only in lake and railroad interests, but in the extensive manufacturing industries that have been established in consequence of the cheapness of fuel and the many routes by which such manufactures can be distributed.

Oswego has practically fallen into decay, and her population has not increased for twenty years; her lake and canal traffic has dwindled down to Canada lumber shipments and receipts during the season, and Canada barley and peas in the fall. The enlargement of the Welland Canal has not benefited the port, as the tonnage of the large carrying vessels of the lakes has outgrown the size of the enlarged Welland, and they of necessity leave their cargoes at Buffalo. The vessels passing through the Welland Canal only carry grain consigned to Montreal parties, and that grain breaks bulk at Kingston and is transferred to barges, as per old-time custom.

It is worthy of note that for many years after the completion of the Oswego Canal to Syracuse Buffalo canal commerce remained almost stationary. It would take too much time and space to give the reasons for this effect and the causes which produced it.

Oswego always opposed low tolls and any reduction of tolls, for the reason that by that route to tide-water only half tolls would have to be paid as compared with Buffalo; shipments from the latter, of course, paid tolls on the whole length of the canal. Oswego never thought, apparently, that vessels from the West to that port had to pay tolls on the Welland Canal and had a longer lake voyage. The time of lockages and extra lake mileage from Port Colborne to Oswego would make a difference of at least three days, yet this fact was never mentioned in the discussions or rarely hinted at.

RAILROADS VS. CANALS.

The sharpness of competition of railroads has had the effect of compelling the State to abolish the tolls on the canals, so that boatmen could be enabled to obtain a livelihood. Even now, without tolls, the railroad competition in freight charges keeps canal rates very low, boatmen hardly paying running expenses and really leaving them no overplus for repairs and interest on original outlay for boat, mules, &c. A certain minimum rate of railroad charges affects prices of canal freight and compels boatmen to carry at no profit. What that minimum rate is would be a proper subject for investigation.

There is no rule governing or regulation bearing upon the influence of water rates on railroad rates, and *vice versa*. Canal boats are never pooled or associated together to charge one uniform rate; there are too many of them. Railroads, on the contrary, have generally an agreement on freight rates, and as a rule keep to the compact pretty closely, except when a "war" breaks out through some underhand work being discovered or disagreement as to the pro rata tonnage to be allowed. The contract system of taking freight from the West to the East and to Europe under one bill of lading by railroad and steamboat companies gives this method special advantages which the canal route along does not possess, and consequently large shipments are made by railroad from the West, say, to Chicago, thence by lake to Buffalo, and from thence either by canal or railroad to the sea-board on foreign orders. The intermediate charges for commissions are thus saved and a corresponding reduction of price to the purchaser.

THE PROPOSED ERIE SHIP-CANAL.

At a meeting of the American Society of Civil Engineers, held in Buffalo, June 10 to 13, 1884, a paper by Mr. Elnathan Sweet was read on the "Improvement of the Erie Canal." In substance he recommends that the canal should be enlarged to a depth of 18 feet and a width of 100 feet, with locks 450 feet long and 50 feet wide, so as to accommodate the large lake vessels and permit continuous transportation from Chicago and other points on the lakes to New York. The cost of the enlargement and changes connected therewith he estimates at $150,000,000. The idea of enlarging the Erie Canal into a ship-canal seems to me to be chimerical, and the proposition should receive its quietus as soon as possible. The plan is in every way impracticable, although on paper it looks feasible. It may be fairly doubted whether the gentleman who proposes the enlargement fully appreciates the formidable character of such an undertaking and the many difficulties which would stand in the way of its success.

The vessels to navigate the canal are to be those employed upon the lakes. These crafts are of heavy build and as strong as wood and iron can make them, of great tonnage, say from 2,500 to 3,000, requiring a depth of 20 feet of water for safe navigation, and from 250 to 300 feet in length and from 35 to 45 feet beam. On the lakes steam or sailing vessels of less size are not profitable ventures, and the tendency is to build them still larger. It follows of course that a ship-canal from the lakes to the Hudson must be deep enough and wide enough, with locks and appurtenances in proportion, to accommodate such vessels. The difficulty of obtaining water is a serious one, but Mr. Sweet proposes to change the line and feed all the way from Lake Erie. He estimates that fewer locks than are at present in use would be needed, as only four levels would be required between Buffalo and Newark, then another level to Utica, and thence several shorts levels to tide-water. The Hudson River must be deepened in all places where shallow water exists to allow the passage of these large vessels.

Now regarding the question of cheap transportation, how much less than 3¼ cents the going rate at the time—per bushel for wheat from Buffalo to New York would rule, taking the interest on the cost of the large vessels, the expenses of wear and tear, fuel, crew, &c., into consideration. The time consumed on the journey, allowing 1 mile an hour for propellers (the speed made on the Welland Canal), would alone be sufficient to prove the impracticability of the scheme. At this rate of speed it would take fifteen days to make the journey from Buffalo to New York, presuming the statement of the time made on the Welland Canal to be correct. Celerity of movement as well capacity of vessels is a great desideratum now a days.

Vessels were then receiving from 2¼ to 2¾ cents per bushel for wheat from Chicago to Buffalo. Is not this transportation cheap enough to satisfy the most ardent cate of low rates? This price is received only upon the knowledge that a freight from Buffalo of coal at 80 cents per ton can be obtained. What freight sufficient quantities to pay could large propellers bring from New York to Buffalo carry thence to western points? The transfer of grain from vessels to canal always has been considered a great advantage to the grain, especially in warm weather.

At the first glance the construction of a ship-canal has been many times fully discussed project, but the question of a ship-canal has been many times fully discussed evidence submitted has shown the utter impracticability of such a scheme. The of Mr. Sweet's proposed ship-canal would be nearer $250,000,000 than $150,000,000, my opinion. The trip from Buffalo to New York and return would take about month, time enough for a propeller to make three round trips to and from Chicago.

The North Holland Ship-Canal, extending from the Helder to the city of long, 21 feet in depth, and 124 feet wide at the top and 31 at towed upon it. The best speed made upon it, it is said on our lakes of from 12 to 15 miles per hour. Then the time of lockage must be taken vessels breaking down the

accident frequently occuring on the Welland Canal. A vessel drawing 15 feet ought to have 18 or 20 feet of water to move in a channel so confined, even if only 1 mile of speed per hour is to be obtained. Imagine the snail-like pace of a 2,500 ton vessel looming up with its gigantic proportions on the narrow water-way. Again, imagine the momentum of such a craft and calculate the chances of accident from a failure to slack up at the right moment to pass a bridge or enter a lock.

What is to be done with all the bridges that cross the canal? If swing bridges are to be used, how much time will be lost on the round trip on their account? How many bridges will be carried away by the impetus of the vessels, if they are not immediately opened at the signal? In the New York Produce Exchange report for 1872–73, on page 226, some valuable remarks are to be found about the Huron and Ontario Canal, a project favored by the Canadians, full surveys of which were made. That was to be a ship-canal 100 miles long with about the same lockage as the Erie Canal. It is asserted that it would take a steamer four days to pass through it; at that rate it would take a steamer fourteen days to pass through the Erie Canal, or a sailing vessel or lake barge twenty-eight days, if the time spent in passing through the Welland and that estimated for this Huron and Ontario Canal in the case of sailing and steam vessels is correctly given. Such figures are fatal to Mr. Sweet's Erie ship-canal project, even if the time is somewhat overstated.

Arguments could be given *ad infinitum* against the proposed ship-canal by publishing the opinions of those well posted on the subject and from numerous papers that have been printed both in the United States and Canada, but enough has been written here to draw attention to the salient points of the scheme and point out its utter impracticability.

The last enlargement of the Erie Canal effected a reduction of the cost of transportation upon it a trifle over 50 per cent., a reduction predicted by the State engineers before the work was undertaken. Another similar enlargement would doubtless result in another such reduction. This re-enlarged canal would then accommodate canal boats with a sufficient capacity to carry about 800 tons, and it is safe to say that such an enlargement is as near an approach to a ship-canal as we will ever see, or as would be practicable or desirable.

HISTORIC POINTS RELATIVE TO THE CONSTRUCTION OF RAILROADS IN THE STATE OF NEW YORK COMPETING DIRECTLY OR INDIRECTLY WITH THE ERIE AND OSWEGO CANALS.

New York Central and Hudson River Railroad.
New York, Lake Erie and Western.
New York, West Shore and Buffalo.
Buffalo, New York and Philadelphia.
Rochester, Pittsburgh and Buffalo.
Lehigh Valley Railroad and Lehigh Valley *Railway.*
New York, Lackawanna and Western, and Delaware, Lackawanna and Western Railroad leased lines.
Rome, Watertown and Ogdensburg.
New York, Ontario and Western.
Ogdensburg and Lake Champlain.
New York, Chicago and Saint Louis.
Lake Shore and Michigan Southern.
Michigan Central and its branch "The Canada Southern."

NEW YORK CENTRAL AND HUDSON RIVER RAILROAD.

	Miles.
From Buffalo, N. Y., to New York City, N. Y	441.75
Branches	306.99
Leased lines	244.55
Total length September 30, 1883	993.29

This company was organized by the consolidation, November 1, 1869, of the New York Central Railroad Company and the Hudson River Railroad Company.

The New York Central Railroad Company was organized under a special law, April, 1853, authorizing the consolidation of the railroads between Albany and Buffalo, viz:

The Albany and Schenectady Railroad, chartered in 1826 as the Mohawk and Hudson Railroad, begun in 1830, and was opened September, 1831. It was the first railroad built in the State of New York. The name was changed in 1847.

The Schenectady and Troy, chartered 1836; opened 1842.

The *Utica and Schenectady*, chartered 1833; opened 1836.

The Syracuse and Utica, chartered March, 1836; opened 1839.

The Syracuse and Utica Direct, organized under general law and filed articles August, 1860. It was completed and opened 1863.

The Rochester and Syracuse was a consolidation in August, 1850, of the Auburn and Rochester and the Auburn and Syracuse. The Rochester and Syracuse Direct was taken into the consolidation August, 1850. The Auburn and Rochester was chartered in 1836 and opened August, 1841.

The Auburn and Syracuse was chartered in 1834 and opened June, 1838. The direct line was opened 1853.

The Buffalo and Lockport filed articles April, 1852, and opened 1854.

The Mohawk Valley filed articles January, 1851, and December, 1852, and merged under the act of 1853.

The Rochester, Lockport and Niagara Falls was originally the Lockport and Niagara Falls, chartered 1834 and opened 1838. In December, 1850, the Rochester, Lockport and Niagara Falls Company was organized and rebuilt the road.

The Buffalo and Rochester was a consolidation in December, 1850, of the Attica and Buffalo and the Tonawanda. In 1852 this company opened a direct road from Buffalo to Batavia and sold the old road between Buffalo and Batavia to the Buffalo and New York City. The Attica and Buffalo was chartered 1836 and opened 1842; the Tonawanda was chartered 1834 and opened 1842.

These various lines were delivered to the new company August 1, 1853.

The following railroads were subsequently purchased and merged into the consolidation: The Rochester and Lake Ontario, in 1855; the Buffalo and Niagara Falls and the Lewiston, the same year; and the Saratoga and Hudson River (Athens Branch), in 1867. These railroads were paid for in stock or bonds of the consolidated company.

The Niagara Falls and Canandaigua Railroad (originally the Canandaigua and Niagara Falls) filed articles March, 1851; was opened April, 1854, and leased to the New York Central, September, 1858.

The Hudson River Company was chartered May, 1846, and road opened entire length October, 1851. Prior to its consolidation in the New York Central and Hudson River Railroad Company it had taken a lease of the Troy and Greenbush Railroad, opened in 1845. This lease was assumed by the consolidated company.

In 1851 the New York Central Railroad was relieved from the "canal tolls" on the ground that it should be placed on as favorable a footing as the Erie Railroad, which by its charter was exempt from them.

NEW YORK, LAKE ERIE AND WESTERN RAILROAD.

	Miles.
From Jersey City, N. J., to Dunkirk, N. Y	460.03
Branches	96.55
Leased lines	1,033.37
Operated lines	39.08
Total length, September 30, 1883	1,629.03

Included in the principal leased lines are the—

Buffalo, New York and Erie Railroad, from Corning to Buffalo, N. Y., 142 miles; leased May 1, 1863, for four hundred years at a rental of $233,100 per annum.

Buffalo and Southwestern Railroad, from Buffalo to Jamestown, N. Y,, 67.47 miles; organized 1872 as the Buffalo and Jamestown Railroad Company and opened in 1875; reorganized in 1877 after foreclosure sale, under present title; leased August, 1881, to the New York, Lake Erie and Western Railroad at annual rental equaling 35 per cent. of gross earnings after deducting a certain amount of terminal charges.

Suspension Bridge and Erie Junction Railroad, from Buffalo to Suspension Bridge, 23.28 miles; organized 1868; opened and leased to Buffalo, New York and Erie Company 1871.

Erie International Railway, a short line of about 4 miles connecting the Suspension Bridge and Erie Junction Railroad with the International Suspension Bridge at Black Rock, Buffalo.

The New York and Erie Railroad Company was chartered April, 1832, and construction commenced in 1836. In the same year the credit of the State of New York was granted to the company for $3,000,000. In September, 1841, the first section from Piermont (the eastern terminus provided by the first charter) to Goshen was opened. The company becoming embarrassed the undertaking was placed in the hands of assignees, under whose management the road was opened to Middletown, January, 1843. The cost to February, 1844, was $4,736,949, of which $2,599,514 were derived from the State loan. In 1845 the State released the property of its mortgage, provided the company should complete the road to Lake Erie in six years, and the old stockholders surrendered one-half of their stock. The sum of $7,000,000 was the estimated amount necessary to complete the road. Construction was resumed and the road opened to

Port Jervis January, 1848; to Binghamton December, 1848; to Elmira October, 1849; to Hornellsville September, 1850; and to Dunkirk, April, 1851. The Newburg Branch was opened 1850. The gauge of the road when opened was 6 feet (broad gauge).

In 1859 the road and property of the New York and Erie Company was placed in the hands of a receiver for non-payment of interest on its funded debts. A reorganization was had under the name of the Erie Railway Company, June, 1861.

In May, 1875, the road and property were again placed in the hands of a receiver for non-payment of interest on its bonds and the terms of another reorganization were agreed upon. The new (present) company took possession of its road June, 1878.

The laying of the third rail, giving the standard gauge from Jersey City to Buffalo, was completed December, 1878.

On the 1st of May, 1883, possession was taken of the New York, Pennsylvania and Ohio Railroad under a lease which guarantees to the lessor a rental equal to 32 per cent. of the gross earnings up to $6,000,000, and 35 per cent. on all in excess of that sum.

Lately the Bradford, Eldred and Cuba, the Bradford, Bordell and Kinzua, the Tonawanda Valley and Cuba, have been leased by the company. These are all narrow-gauge roads passing through and connecting with Pennsylvania oil-fields.

The Lehigh Valley Railroad connects with the New York, Lake Erie and Western Railroad at Waverly, 167 miles east of Buffalo, and the trains of that company use its line.

NEW YORK WEST SHORE AND BUFFALO RAILROAD.

	Miles.
Length of main line from Weehawken, N. J., to Buffalo, N. Y.	425.95
Branches	46.88
Total length September 30, 1883	472.83

Organized February, 1880, for the purpose of building a railroad from New York City, on the west shore of the Hudson River, to Buffalo, N. Y., by way of Utica and Syracuse, with branches to Albany and Rochester, N. Y., a total length of about 500 miles. In 1881 the Jersey City and Albany Railroad, chartered September, 1878, owning a line from Weehawken, N. J., to Fort Montgomery, N. Y., 38 miles, was consolidated with the North River Railroad, which had been organized in 1880 to build a line from Fort Montgomery to Albany, with a branch to Middletown, about 165 miles. Under the name of the latter company this consolidated line was subsequently merged into this company, and forms the main line of the railroad between New York City and Albany. This section, by agreement, was built by the New York, Ontario and Western Railroad Company, and from Cornwall down is leased by it.

This road was opened for through traffic the entire distance January 1, 1884.

BUFFALO, NEW YORK AND PHILADELPHIA RAILWAY.

	Miles.
From Buffalo, N. Y., to Emporium, Pa	120.55
Leased lines in addition	198.77
Total length September 30, 1882	319.32

Formed by consolidation in February, 1865, of the Buffalo and Alleghany Valley (chartered in 1853) and the Buffalo and Washington, organized 1865. Road opened 1873. Since the close of the fiscal year the company has been merged into the

BUFFALO, NEW YORK AND PHILADELPHIA RAILROAD COMPANY.

	Miles.
From Buffalo, N. Y., to Emporium, Pa	120.55
*Five divisions owned and leased	551.33
Total length September 30, 1883	671.88

The Buffalo, New York and Philadelphia Railroad Company was formed by the consolidation, February 14, 1883, of the Buffalo, New York, and Philadelphia Railway Company (see above); the Buffalo, Pittsburgh and Western Railroad Company; the Oil City and Chicago Railroad Company, and the Olean and Salamanca Railroad Company.

*These five divisions include the profitable narrow-gauge lines running into the oil regions of Pennsylvania (connecting at Olean and Eldred, Pa.), and the Rochester, N. Y., division along the line of the old Genesee Valley Canal.

ROCHESTER, PITTSBURGH AND BUFFALO RAILROAD.

	Miles.
From Rochester, N. Y., to Salamanca, N. Y	108.49
From Buffalo, N. Y., to Ashford, N. Y	47.26
From Bradford Junction, N. Y., to Walston Junction, Pa	121.44
Operated line	1.03
Total length September 30, 1883	278.17

(The average number of miles operated during the year was 150. The Buffalo Division was not completed and ready for traffic until the beginning of 1884, and other portions were not finished up to September, 1883.)

This road was organized as the Rochester and State Line Railway Company in 1869, and was opened May, 1878. Receiver appointed in 1880. Reorganized February, 1881, under the title of the Rochester and Pittsburgh Railroad Company.

In 1881 this company organized the Pittsburgh and New York, and the Bradford and State Line Railroad Companies, in Pennsylvania, and the Great Valley and Bradford, the Buffalo, Rochester and Pittsburgh, and the Rochester and Charlotte Companies, in New York, with a view to securing the legal rights to build and operate extensions of its line then projected, from a point 1 mile north of Salamanca south to Brookville, Pa., 105 miles; from Ashford, on the main line northwest, to Buffalo, 48 miles, and from Rochester to Charlotte, on Lake Ontario, about 9 miles. These several companies have been consolidated and construction completed.

In 1882 the company made a contract with the Pennsylvania Railroad Company for the use of the Alleghany Valley Railroad, from Falls Creek into Pittsburgh, on a pro rata basis. The company has purchased the franchise and capital stock of the East Buffalo Terminal Railroad, of Buffalo, and will extend its track into the heart of the city; and have leased the use of the Buffalo Creek Railroad Company's track to the river, thus securing a desirable water frontage for the Western coal trade. The company practically owns all the capital stock of the Rochester and Pittsburgh Coal and Iron Company, which owns two towns—one at Beechtree, 148 miles south of Buffalo, and the other at Walston, 182 miles south of Buffalo. Two collieries have been opened at each of these places.

LEHIGH VALLEY RAILROAD.

	Miles.
From Phillipsburg, N. J., to Wilkes Barre, Pa	101.0
Branches and connections	220.8
Total	321.8

Chartered as the Delaware, Lehigh, Schuylkill and Susquehanna Railroad, April, 1846; took present title January, 1853. The main line completed in Pennsylvania October, 1855.

The Easton and Amboy Railroad, from Phillipsburg to Perth Amboy, 60 miles, was opened June, 1875, and is now operated as part of the main line. It was built under a separate charter, but is owned by the Lehigh Valley Railroad Company.

This company also owns controling interests in the Pennsylvania and New York Canal and Railroad Company and the Geneva, Ithaca and Sayre Railroad.

The Lehigh Valley Railroad connects with the—

Pennsylvania, New York Canal and Railroad.—From Wilkesbarre, Pa., to New York, Lake Erie and Western Junction at Waverly, N. Y., 104.30 miles; from that junction it uses 127 miles of the New York, Lake Erie and Western Railroad to Lancaster, 12 miles from Buffalo, from which point a branch is being constructed by the—

Lehigh Valley Railway Company, which is an organization under the general railroad law, and the road is now in process of construction from Buffalo, N. Y., to Lancaster, N. Y., 12 miles. It was chartered March, 1882. This company uses, in connection with the New York, Lake Erie and Western Railroad, the Buffalo Creek Railroad, a short line running to the docks and wharves on Buffalo River. It is by this road that the company reaches its extensive docks, coal chutes, &c., constructed on what is called the "Tifft farm improvement." The Lehigh Valley Railway Company and the Lehigh Valley Railroad Company are practically one institution.

NEW YORK, LACKAWANNA AND WESTERN RAILROAD.

	Miles.
From Binghamton, N. Y., to International Bridge, New York	207.23
Branch East Buffalo to Buffalo	3.12
Total length	210.35

Was chartered August, 1880; completed and opened September, 1882.
On the 2d October, 1882, the road was leased to the Delaware, Lackawanna and Western Railroad Company in perpetuity.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD—LEASED LINES.

This company is the lessee of the following railroads in the State of New York:

Railroads.	From—	To—	Miles.
lley Railroad Company	Pennsylvania State Line	Binghamton	11.64
w York, Lackawanna and Western.	Binghamton	Buffalo International Bridge	207.73
r York, Lackawanna and Western.	Buffalo City	Branches	5.97
nga and Susquehanna	Susquehanna River	Ithaca	34.41
ego and Syracuse *	Syracuse	Oswego	34.98
ene	Chenango Forks	Greene	8.10
a, Chenango and Susquehanna.	Greene	Utica	75.66
	Cassville Junction	Richfield Springs	21.75
Total length			400.24

The leased line particularly interesting as a competitor with the canals of our State is the Oswego Syracuse Railroad, which was chartered April 1839; amended May 1845; road opened May 1848, leased February 1869 to above company.

ROME, WATERTOWN AND OGDENSBURG RAILROAD.

	Miles.
m Ogdensburg, N. Y., to Rome, N. Y	141.11
m Oswego, N. Y., to Lewiston, N. Y	143.02
nches	96.37
sed lines	36.38
Total length	416.88

he Watertown and Rome Railroad Company, chartered April, 1832, opened September, 1851, from Rome to Watertown, and to Cape Vincent June, 1852. The Potsm and Watertown Railroad Company, chartered February, 1852; opened June, 1857. se two roads were consolidated under the above title, by special act of the legisre, October, 1861.
he Lake Ontario Shore Railroad Company, chartered March, 1858, opened to Ono, 1873, was sold under foreclosure September, 1874, and transferred to this comy January, 1875, and completed to Lewiston in 1876.
he Syracuse Northern Railroad Company, chartered February, 1868, was opened 2. Sold under foreclosure, consolidated with this company, August, 1875.
he Niagara Falls Branch Railroad Company was chartered December, 1875, and sed to this company November, 1881.
he Oswego and Rome Railroad Company, leased to this company, was chartered ril, 1863, and opened January, 1866.

NEW YORK, ONTARIO AND WESTERN RAILROAD.

	Miles.
m Oswego, N. Y., to Middletown, N. Y	249.60
sed lines	77.50
nches	95.00
Total length, September 30, 1883	422.10

rganized as the New York and Oswego Midland, January, 1866; main line opened y, 1871, and Western Division August, 1873. In the latter year the company delted and its property was placed in hands of receiver September same year.
n November, 1879, the new company, the New York, Ontario and Western, was med from the wreck of the old with additional capital. During 1882 77 miles of d were constructed, from Middletown to the Hudson River, at Cornwall, and nce to Weehawken, opposite the city of New York. This section, by recent condations, has become a part of the New York, West Shore and Buffalo Railroad, is operated over by this company, under lease.

OGDENSBURG AND LAKE CHAMPLAIN RAILROAD.

	Miles.
From Ogdensburg, N. Y., to Rouse's Point, N. Y	118

Chartered as the Northern Railroad Company, May, 1845; opened October, 1850. Reorganized in 1857 as the Ogdensburg Railroad; transferred in August, 1865, to this company.

NEW YORK, CHICAGO AND SAINT LOUIS RAILROAD (NICKEL PLATE).

	Miles.
From Buffalo, N. Y. (via Fort Wayne, Ind.), to Chicago, Ill	512.54
Leased lines	10.50
Total length, September, 1883	523.04

Organized April 1881, under general railroad law of New York; construction began in 1881 and the road opened for traffic October, 1882. This road is under the control of the Lake Shore and Michigan Southern Railroad Company, through ownership by that company of $14,050,000 common and $12,480,000 preferred stock.

LAKE SHORE AND MICHIGAN SOUTHERN RAILROAD.

	Miles.
From Buffalo, N. Y., to Chicago, Ill	540.49
Branches, leased lines, &c	799.05
Total length	1,339.54

Was formed by a consolidation in 1869 of the—
First, Michigan Southern and Northern Indiana, Chicago to Toledo, with branches.
Second, Cleveland and Toledo, Toledo to Cleveland.
Third, Cleveland, Painesville and Ashtabula, Cleveland to Erie.
Fourth, Buffalo and Erie, Erie to Buffalo.
Each of these companies were consolidations of many other companies.

MICHIGAN CENTRAL RAILROAD.

	Miles.
From Detroit, Mich., to Kensington, Ill	270.07
From Kensington, Ill., to Chicago, Ill. (operating by lease over Illinois Central Railroad)	14.00
Other leased lines	750.26
Total length, December 31, 1883	1,034.33

Under an agreement, entered into December, 1882, this company operates the Canada Southern Railroad and its leased lines for twenty-one years from January, 1883.

CANADA SOUTHERN RAILROAD (NOW BRANCH MICHIGAN CENTRAL RAILROAD.)

	Miles.
From International Bridge, Niagara River, to Windsor, Ontario	226.18
Extensions, branches, and proprietary lines in Canada, Michigan, and Ohio	207.64
Total length, December 31, 1883	433.82

Chartered in Canada, February, 1868; entire line opened November, 1873; soon after company defaulted on bond interest, and in 1878, under a plan of reorganization the whole property came into the hands of the existing company, and the Michigan Central Railroad will operate the line in connection with its own for twenty-one years under certain conditions.

For nearly two years the principal western terminus has been changed from Amherstburg to Windsor, Ontario, opposite Detroit, Mich., where direct connection is made by ferry boats with the Michigan Central Railroad.

APPENDIX No. 73.

STATEMENT IN REGARD TO THE COMMERCIAL, INDUSTRIAL, AND TRANSPORTATION INTERESTS OF THE CITY OF CINCINNATI, BY SIDNEY D. MAXWELL, ESQ., SUPERINTENDENT OF THE CHAMBER OF COMMERCE OF THAT CITY.

The most important changes in the railway relations of Cincinnati during the last fiscal year have occurred south of the Ohio River, where the development and unification of railway interests that have taken place in late years have been of great importance to this city. The Chesapeake and Ohio Railway more than ever before has become an important factor in the transportation relations of Cincinnati, especially since the completion of the road to Newport News This has exerted an influence both favorable and unfavorable, inasmuch as, with the decided advantages growing out of another direct line from Cincinnati to the seaboard, there has come the shipment of considerable freight that otherwise would have reached this city directly from the Interior of Kentucky to seaboard ports without touching Cincinnati at all. It, however, has been in the Cincinnati, New Orleans, and Texas Pacific (Cincinnati Southern) Railway that the changes have been most noticeable. A number of important events connected with this great line of Railway to and through the South have transpired, none of them so important, perhaps, as the determination of tht board of trustees to grant permission to the lessees of the road to change the gauge of the same from 5 feet to 4 feet 8½ inches, to conform to the uniform standard of Northern roads, on condifion that it be made without expense to the city of Cincinnati. There has been some difference of opinion as to the authority of the Trustees in the matter, but after full consideration of the whole subject, and the procuring of valuable legal opinions on the subject, the board of trustees has seen fit to grant the necessary permission. This will serve the double purpose of enabling the Southern Railway to transact its business with less terminal facilities at Cincinnati than would otherwise be necessary for the satisfactory management of its traffic here, and of opening the way for a continuous line of railway via Cincinnati of the same gauge from the most northeasterly and northern points to the Gulf States and ports. The year has been marked by the completion of the New Orleans and Northeastern Railroad from Meridian to New Orleans, thus giving an unbroken line of railway between Ciacinnati and New Orleans by a shorter route than any now existing, and as short, perhaps, as will ever be constructed between the Queen and Crescent cities. Although the new part of this great line, extending from Meridian to New Orleans, a distance of 195 miles, has not been long in operation, enough has been seen to indicate that the hopes of the projectors of that part of the road will find an ample realization when we shall have a return of good times. Through passenger trains have been running since the 18th of November, 1883, between Cincinnati and New Orleans; through freight traffic having commenced on the 1st of that month. The distance from this city to New Orleans by this route is 827 miles. The road extending from Monroe to Shreveport, which was in process of construction at the time I submitted my last report, has been completed, and trains are now running from Vicksburg to Shreveport, a distance of 168 miles, thus making a line of railway in the Cincinnati Southern Railway interest extending from Cincinnati to Shreveport, via the Cincinnati Southern, a distance of 336 miles; the Alabama and Great Southern Railroad, 296 miles; the Vicksburg and Meridian Railroad, 140 miles; and the Vicksburg, Shreveport and Pacific Railroad, 168 miles; a total distance of 940 miles. The road from Vicksburg to Shreveport is the standard gauge of the north, having been so made with a view to a uniformity of gauge throughout the entire length of the line, when the contemplated change shall have taken place in the Cincinnati Southern Railway and the remainder of the Queen and Crescent route, by which name this whole system is now popularly known. Beyond Shreveport, a distance of 19 miles, so much of the Gould system running westwardly as is embraced between Shreveport and the State line between Louisiana and Texas has been acquired, thus making the road that much longer than is indicated by the preceding figures. This makes 1,154 miles of railway under a common management, thoroughly identified with Cincinnati interests, reaching, on the one hand, New Orleans, and there connecting with what is known as the Morgan road, running

westwardly from the Mississippi River, opening up some of the richest parts of Southern Texas, and, on the other hand, connecting with the Texas Pacific Railroad, through the instrumentality of the roads to which allusion has already been made. Considerable work yet remains to be performed between Vicksburg and Shreveport in order to place the road entirely above the liability to danger from high water. When this is done and the gauge shall have been changed, there will be a royal line of railway extending from Cincinnati to Houston and Galveston. A narrow-gauge road, known as the Houston, East and West Texas Railroad, running from Houston to Shreveport, is now approaching completion, which will shorten the distance between Shreveport and Houston and Galveston, and which must prove a tributary to the Southern railway system of some importance.

The winter was hard on Southern roads. The unusually cold weather for that climate, the freezings and thawings, and freshets all contributed to increase the operating expenses of the railways, and consequently to affect their revenues. To this the Cincinnati Southern was not an exception. There was, moreover, a shortage in the cotton crop on the line of the Meridian and Vicksburg Railway and in the State of Alabama, to which this road looks largely for cotton traffic, and, besides, the general stagnation in the iron business of the country reached the Southern furnaces, notwithstanding their economical capabilities, and resulted in a number of them going out of blast. Of course this is generally understood to be temporary, the furnaces making the general dullness and the unfavorable nature of the business an opportunity for making repairs and getting their furnaces in a situation to perform the work in the most successful manner when there shall come an improved condition in the iron interest. Of six furnaces in Birmingham but one is now in operation. On the other hand, the capacity for production has been and is now steadily increasing.

At Dayton, Tenn., on the line of the Southern Railway, two furnaces are in process of erection by an English company that has already made a large expenditure of money in the construction of works of the most durable nature.

In addition to iron depression, lumber in the South has been extraordinarily cheap and there has not been the usual inducement to push the pine lumber of that region which is generally regarded as destined to make an important contribution to the freight of this road. Of course the disturbances in Wall street have had an overshadowing influence both South and North, and have, to a greater or less extent, affected the business of the districts tributary to this road, the same with all other localities. It is an encouraging feature, however, that none of these influences can be more than temporary, and have probably mainly expended their force at this time.

There is perhaps no more significant feature pertaining to the industrial progress of our country than the development of the iron interests that are adjacent to this line of railway. The more that is known of them the more it becomes apparent that they are to become a most important factor in the future production of iron in this country. The abundant and eminently available supply and the excellent quality of the ores and their proximity to coal and limestone combine to promise the production of store-coal iron at the minimum cost in this country, and give assurance in the not distant future of the most important accessions to the railway traffic of that region. It is another significant fact that the through business of the road has increased at Cincinnati since the 1st of January, 1884, about 40 per cent. over the corresponding period of the previous year. The road having been but just completed to Shreveport, of course nothing has transpired to indicate how largely it can rely upon the interior system of Texas railways, but it is very apparent that the connection will bring business to the Southern railway system, at least to so much of it as pursues an easterly and westerly course, furnishing, as it will, an available line for the interchange of commodities between the Carolinas and Georgia and the South Atlantic sea-board generally and the State of Texas. At New Orleans ample grounds for terminal facilities have been procured and suitable depots are already in use. The Mississippi River is reached where there is great depth of water, and where unusually good facilities will eventually exist for an interchange of business between the railways and ocean vessels. It will thus be seen that notwithstanding an unfavorable business period, and that much remains to be done to perfect the Cincinnati Southern Railway system, important progress has been made during the year. Through passenger trains are now making the time between Cincinnati and New Orleans in less than thirty-two hours, which will be shortened from time to time as the condition of the road will allow. In this connection it is proper that I should repeat what has been expressed previously in these reports concerning the effect of the building of the Cincinnati Southern Railway, which was to make Cincinnati the northern terminus of the Louisville and Nashville system equally with that of Louisville, thus giving Cincinnati the advantage of two great lines of railway reaching out in their ramifications into all parts of the South and Southwest, with which should be grouped the Chesapeake and Ohio and the Knoxville extension of the Louisville and Nashville Railroad, with their arms reaching into Virginia, the Carolinas, and the entire sea-board of the South Atlantic States. Reference was made in my last report to the

last named, which by the building by the Kentucky Central Railroad of an extension 36¼ miles in length, from Richmond to Livingston, Ky., on the line of the Louisville and Nashville Railroad, was to secure to Cincinnati a direct line to Knoxville, Tenn. The Kentucky Central extension was completed during the year, and was opened for passenger traffic on the 20th of July, 1884. As soon as the details can be arranged it is understood that through trains will run from Cincinnati to Knoxville, the distance being 281¼ miles. East Tennessee will thus be opened to us by a more direct route than hitherto enjoyed, and the way will be prepared for more intimate relations in the future with the South Atlantic sea-board, which by way of Knoxville will be nearer to Cincinnati than by existing routes. In this connection it may also be proper to allude to a project looking to the extension of the Chesapeake and Ohio Railway system from an interior point in Kentucky to Nashville, Tenn., which is now attracting attention, and which, if consummated, would give Cincinnati an additional route to Southern Kentucky and Middle Tennessee.

The Cincinnati and Eastern Railway which has been in process of construction a number of years, from Cincinnati to Portsmouth, Ohio, a distance of 106 miles, is completed to Portsmouth, and cars are now running through. It is expected that the change of this road from narrow to standard gauge which is already commenced will be completed within thirty days. Until through arrangements are made the cars, as they have been doing recently, will enter the city over the track of the Pittsburgh, Cincinnati and Saint Louis Railway from Batavia Junction, using the depot of the former. Arrangements have been completed for a standard gauge equipment, so that by the time the change contemplated shall have been made, we shall have another standard road added to the catalogue of those which are concentrating at this city. At Portsmouth this road will connect with the Scioto Valley Railway, through the instrumentality of which, at Ashland, connections will be made with the Chesapeake and Ohio and Chattaroi Railroads, together with the Portsmouth branch of the Cincinnati, Washington and Baltimore Railroad. It is not the expectation of the friends of the enterprise, however, that this road will have its eastern terminus at Portsmouth, but that it will be continued to Gallipolis, intersecting, on its way, the Symmes Creek coal-fields, which are practically unworked, and which are recognized as being a district unusually rich in coal resources.

Many changes have transpired in the Toledo, Cincinnati and Saint Louis Railroad, the narrow-gauge enterprise, which, it was thought, might, to some extent, indicate the value of such railways over long distances. This road, because of its financial embarrassments, having passed into the hands of a receiver, was in part sold at public sale, on the 28th day of June last, the Dayton, South Eastern, Cincinnati and the Iron Division having been taken by the first mortgage bondholders. The sale of the Cincinnati Northern Division, extending from Cincinnati to Dodds, which constituted the original Cincinnati Northern Railway prior to its consolidation with the remainder of the Toledo, Cincinnati and Saint Louis system, and which was advertised to take place at the same time, was postponed until September 15, and since has been still further postponed. Since the sale occurred the Dayton Division, extending from Dayton to Delphos, a distance of 100 miles, the Southeastern Division, extending from Dayton to Wellston, 180 miles, the Iron Division, extending from Wellston to Ironton, with its branches, have passed into the hands of the Indiana, Bloomington and Western Railway, through whose instrumentality with that of the Northern Division, for which a receiver has been appointed, the Dayton Division, which extends from Lebanon Junction on the Southeastern Division to Dodds, the northern terminus of the Northern Division continues to be maintained as a route from Cincinnati to Dayton. What relations the two last named divisions are to permanently sustain to the Indiana, Bloomington and Western Railway system does not yet appear; but taken in conjunction with the fact that these would furnish this laudably ambitious railway an opportunity of reaching Cincinnati by a line which would be entirely beyond the reach of floods for all time—which would pass through a magnificent agricultural country, that for suburban development has surpassing advantages—which would intersect or skirt the great limestone fields of Centreville, at present but little worked, yet containing resources which would be a source of large revenue to a railway for generations, and which would secure to it an entrance into Cincinnati by the most eligible route, should the old tunnel be completed, that Cincinnati probably ever will have—it is not difficult to see how great the inducement would be to endeavor to make this a component part of a system of railway which is already making its impress upon the transportation of this part of the country, and which may very properly aspire to an independent entrance into the city.

In this connection it may be stated that of late the desirableness of completing the old tunnel under Walnut Hills, on which a large amount of work was done many years ago, becomes more apparent than ever, and that plans are maturing looking to the attainment *of this end.* The two great floods in the Ohio, which, for the time being, *suspended the freight* transportation of all the railroads on the Ohio side of the

xcept the narrow-gauge road entering by way of Walnut Hills and Deer alley, has awakened a new interest in this tunnel project, and it is manifest wever much its completion may be delayed, it eventually will become a great entrance into the city, through which more than one road will seek admis- a direct and expeditious route well-nigh to the heart of both population and ss. In this connection, too, it may be remarked that the desirableness of a belt n of railway, which would bring the various railroads of the city into communi- n with each other by an expeditious and economical connection, and to a large at carry railway facilities to the doors of our manufacturers and merchants, is be- ng more apparent. Years of agitation appear necessary to secure this object, it is a want which is urgent and from which the city is yearly losing ground ch she will find it difficult, if not impossible, to fully regain.

The Ohio and Mississippi Railway during the year has been taken out of the nds of the receiver by the stockholders, who have resumed control of its affairs, . W. Peabody, esq., general manager at the time of the change, having become oth president and general manager under the new arrangement. With this ex- eption and those already named, no important changes have occurred in the roads concentrating at Cincinnati north of the Ohio River. The business of the roads generally was more or less impaired by diminished crops and depression in general business during at least six months of the period, though this did not prevent some of the roads from making favorable exhibits for the year. The occurrence of the great flood in February, 1884, which resulted in a practical suspension of freight business at Cincinnati for seventeen days, operated unfavorably on transportation, al- though the railroads were by no means so seriously affected as was the river. The main interruption to the railway service was at the points of intersection with the river, less embarrassment having been encountered in the interior from the smaller streams than during the high water of the preceding year. Besides, the more serious interruption to river traffic necessarily diverted some business to the railroads, which thus found, as far as they were concerned, an element of compensation. The year brought the practical completion of the general passenger depot, known as the Grand Central Station, which for some time has been in process of erection by the Cincin- nati, Indianapolis, Saint Louis and Chicago Railway. This station, bounded by Central avenue, and Third, Pearl, and Rose streets, occupies an area of 180,000 square feet, which doubtless will be largely increased on the south to meet the growing de- mand for space. This improvement, which, in view of the previous inadequate ac- commodations at this city, may be regarded as much value almost as the building of a new railroad, has already, with the lands, cost about $1,127,000, to be probably increased to $1,300,000 by the contemplated enlargement of shed space, and is the work of a single railroad, though its advantages are to be shared by other railways. O late the Cleveland, Columbus, Cincinnati and Indianapolis Railway has been admitte to joint ownership in the station with the Cincinnati, Indianapolis, Saint Louis a Chicago Railway by the formation of the Central Station Union Railway Compan of Cincinnati, the corporation being composed of the two railway companies alrea named, the capital stock to consist of $1,200,000, one-half being of common and half of preferred stock. The Cincinnati, New Orleans and Texas Pacific Railways have perfe sissippi, and the Cincinnati, Washington and Baltimore, the Ohio and arrangements by which they enjoy the use of the station, making five railways passenger trains of which arrive at and depart from this magnificent edifice, in its capacity, arrangement, and beauty is alike a credit to the enterprising which has made such a contribution to the comfort of the traveling public the city in which it is located. The general offices of the Cincinnati, Indian Saint Louis and Chicago, and the Ohio and Mississippi Railways are to be loc this building, as well, perhaps, as those of the Cincinnati, Washington and Ba Railroad.

The occurrence of two stupendous floods in as many years, indeed, in one both culminated within the limits of a single year, which submerged the lo of the city, virtually suspending freight traffic and seriously interfering passenger service of the railroads between two and three weeks, has been of serious concern to the railways, and although the circumstances which two such floods are not likely to soon occur again, it has led the roads to de of protecting themselves as far as possible from the inroads of such an inv weak points which were revealed by the flood of February, 1883, we strengthened in the ensuing summer that, by the time the waters came following February, the roads were able to continue their service much limits which marked their surrender in the previous year. This policy themselves against like incursions is still proceeding. The low pla raised, and the vulnerable ones strengthened, so that they will be much than ever before to withstand such extraordinary floods. At least her than this, for it has seriously considered the propriety to place itself beyond the possibility of a like

has made estimates looking to this end. It will thus be seen that, so far from such disasters weakening the spirit of our people, they are made the occasions for the display of a larger enterprise; for if it should be found necessary to lift the railways from the lower levels they now occupy in order to preserve their usefulness there would not be found wanting either the means or the disposition to perform the work.

The river business of Cincinnati during the commercial year ending August 31, 1883, which is the latest period for which statistics are available, was not entirely satisfactory. There was no dearth of freights, but competition was sharp, rates were very low, and the business of the year was more or less broken by the disastrous flood in the Ohio River, which also extended to the Mississippi. The number of boats engaged in the passenger and freight service was less than in the previous year, having numbered seventy-seven vessels, with a tonnage of 41,617, in comparison with eighty-nine vessels and a tonnage of 49,738. These figures, however, do not comprise any of the tow-boats, which now greatly outnumber the other class, and which, for the year, showed an increase, having aggregated one hundred and forty vessels, with a tonnage of 33,727, in comparison with one hundred and twenty-five vessels and a tonnage of 29,055. The whole number of boats plying between Cincinnati and other ports thus exhibits an increase, though the aggregate tonnage falls slightly below the preceding year. The arrivals and departures make the smallest showing in number in a period of ten years, the former having aggregated 2,340 in 1882-'83, in comparison with 2,739 in the previous year. The late decrease, however, is mainly traceable to the discontinuance of the daily packet to Ripley and the tri-weekly packet to Vanceburg, the business of which has since been transacted by the vessels running on longer routes, so that there is very little significance to the change, save what is found in the tendency to consolidate interests, and in the spirit of an economy, which distinguishes the period, and which seeks the suitable performance of a given amount of work by the smallest number of agencies, a policy made necessary by the active competition existing between the railroads and the river, and among the boats, and the general narrowing of margins in all other departments of business. This tendency of the river management to discontinue useless outlay furnishes also explanation of a part of the reduction in the number of arrivals and departures, for by an increased regularity in the movement of the boats, which has been made possible by a concentration of river interests into fewer hands, a less number of boats will transact a given amount of business. The current year when completed will make no better showing if it do not fall behind its predecessor. A complete embargo was placed on river traffic in nearly all of the month of January, 1884, by the extremely cold weather which prevailed, and when this was removed by the moderate temperature which ensued early in February, it was quickly followed by the extraordinary flood in the Ohio River, which practically suspended navigation at Cincinnati well-nigh the remainder of the month. Boats began to lay up on account of high water as early as the 3d of February, and by the 5th navigation was virtually suspended because of the inability of the boats to get under the bridges, and as the waters rose higher it was not possible to receive or discharge cargoes except at remote points from the business parts of the city. It was not until the 23d of the month that river business was fairly resumed at Cincinnati, while weeks ensued before traffic could be said to have been fully restored to normal conditions, because of the crippled condition of the great valley of the Ohio. The year, however, has not been uniformly unfavorable, for a part of the boats did well, and whatever drawbacks were encountered are traceable to the elements, which appeared in conspiracy against river traffic, or to the stagnation in general business which reached all classes, and made serious drains on the revenues of rail and river transportation alike.

The figures which have been furnished showing the movement of commodities at this city, both in quantity and value, are the latest available ones touching the whole business of the city. These have been commented upon in my last report to the Chamber of Commerce and Merchants' Exchange and do not need repetition here. It is sufficient to say that they, in general, make a very favorable showing for the city of Cincinnati. Though they reveal the operation of economical processes that began to make themselves felt early in the latter half of the late commercial year, they were not equal to reducing the aggregate business of the city in any material degree. In some articles there was a very material increase in quantity, though, because of reduced prices, the general aggregate value fell somewhat below the preceding year, the value of commodities received during the year having been approximately $284,239,878, in comparison with $295,605,258 in 1881-'82, and of those shipped from the city $290,907,330, compared with $294,719,798. The former thus showed a reduction of $11,365,380 and the latter of $3,812,468. The business of the city, however, was singularly well maintained. There were very few failures, and such as occurred were generally for small amounts, and did not in any way reflect the general condition of our merchants and manufacturers. The banking capital of the city exhibited a large increase, and paper generally at the banks was very promptly paid, indicating not only the solvency of our business men generally, but their ability to

care for themselves in times of depression. The year 1883–'84, so far as it has transpired, will not make so favorable an exhibit in the aggregate business transacted as was witnessed in the year immediately preceding. The apprehension which was manifested in 1882–'83 has found thus far little relief. The shrinkage, until a recent period, in the value of a large number of the railway securities of the country; the continued depreciation in many commodities; the occasional failures among bankers and banking institutions elsewhere, which were traceable to the crimes of officers or mismanagement, were all calculated to continue the doubt from which the business mind generally was suffering at the commencement of the present year. This, coupled with diminished production in many lines of manufactures, has been unfavorable to the business of the year. To these drawbacks to the year's work should be added the flood of stupendous proportions which occurred in February, 1884, when the water rose, on the 14th of the month, according to the marks at the water works, to the unprecedented height of 71 feet and ¼ of one inch, compared with 66 feet 4 inches on the 15th of the preceding February. This, although not producing any permanent impairment of business, still amounted to a practical suspension of the same during at least one-half of the month. The figures for the present year, consequently, when they shall appear, will have to be measured in the light of the events of the year of a general as well as local character, and will make a showing for Cincinnati which mainly will be very satisfactory. To the close of the fiscal year of the Government there was, compared with the corresponding period of the preceding year, a falling off in a number of commodities in aggregate quantities, as well as aggregate values, but in the larger number of these the losses will not be large, and in some products an increase will be witnessed. The statistics show, in general, business measurably well maintained. The policy of our local banking institutions has been a conservative one, and whatever may have transpired in other localities the faith of the public in these in no case had any occasion to find impairment. The solvency of our business men, which characterized the previous year, has been equally marked in the present one. There has been no failure of any note. The paper in the banks has been paid with promptness. While there has been a curtailment in the usually available funds for the transaction of business, both our merchants and manufacturers mainly have had resources of their own which enabled them to furnish compensation for anything that may have been withheld by the bankers, in their determination to more closely scrutinize credits. The whole period is a tribute to the solidity of the business men generally of this city, who, in general, to such a degree conduct their business on their own resources as to be beyond the reach of great distress. The ability of Cincinnati to endure periods of depression without in any way impairing her capacity for business usefulness, which has been observed in all periods of stringency, has been equally marked in the past two years.

The latest figures touching our manufactures are those for the calendar year of 1883. From the advance sheets of the very complete report of J. F. Blackburn, esq., secretary of the Board of Trade and Transportation of this city, I have had prepared a table of our industries, showing the work performed and the agencies employed in that year in comparison with 1882. In view of the unfavorable circumstances which prevailed in the latter half of the year it is a somewhat surprising exhibit. In comparatively few articles will a reduced production be seen, and in no one was the reduction marked. In many articles there was an actual increase in the value of the aggregate product. The entire product of our industries makes the magnificent showing of $200,357,439 in comparison with $194,572,536 in the previous year. To produce this result, there was employed in 1883 real estate valued at $44,779,169 compared with $43,767,681 in 1882; a cash capital of $78,209,414 in comparison with $77,624,359, and hands numbering 91,761, compared with 90,523. The number of establishments engaged was 5,492 compared with 5,518. This not only exhibits the largest year's work ever performed in this mighty workshop, but is in aggregate value nearly double what our production was fifteen years ago, when prices too were much higher than at the present time, showing that the physical results would exhibit a still larger increase. The number of hands employed is a significant feature of the report, for it shows that the number of persons now actually engaged in production is well nigh equal to the entire population of the city thirty-five years ago. There was a marked increase in all industries immediately employed in building operations, which have been more extensive perhaps than in any other period of the city's history. At no time since the war has there been such a disposition to expend money in the improvement of good business property as in the past two years. Some of the most substantial and valuable edifices, devoted to the business of the city, have been added within this period, while the improvement in the suburbs has been rather in the multiplication of comfortable and tasteful homes for the many than in the erection of magnificent residences for the few. In a catalogue of our industries, embracing one hundred and *seventy-one* distinct classes, an increase over the year 1882 is observable in one hun*dred and sixteen*, while those either showing no increase or a positive reduction *number but* fifty-five. The calendar year of 1884 doubtless will not exhibit such

ıle results. The inducements to curtail production, which made themselves felt atter half of the previous year, have been continuous, and have been much eneral in so much of the current year as has transpired. In many departments ion has been curtailed, and, in the larger number, prices are lower than in the s year, which cannot fail to make an impression on the figures to be made up . The returns from a large number of representative manufacturers indicate distribution of Cincinnati products than ever before, and it is a somewhat ble, as well as favorable, fact, that the larger number of our producers report llections in the fiscal year of the Government ending June 30, 1884. There no reason why this may not be taken as a fair reflection of the condition of chants and the people of the interior. However much they may exercise a in the future, which will result in diminished purchases, it is a most encour- eature of the situation that, notwithstanding diminished crops in some sec- nd of doubt and more or less apprehension in all directions, the people should to pay for what they have purchased in the past. The number of our manu- rs who speak of narrow margins in the past year is noticeably large. Lower or raw materials of certain classes, the disposition to continue production, ong competitive influences, have combined to depress prices of manufactured The decline in prices is not confined to few articles, but reaches nearly the ine, the average reduction of which would probably reach 10 per cent., while articles it would be much greater. In two great departments of production, nd cigars, there have been serious labor complications which for months have curtailed production. The good offices of both the Board of Trade and Cham- Commerce have been invoked, without, thus far, having secured a solution of troubles. In the mean time manufacturers are crippled, laborers are unem- and capital, restless under the friction to which it is subjected, discusses the ty of changing location, which, in the case of the manufacturers of cigars, has instances been accomplished.

APPENDIX No. 74.

STATEMENT PREPARED BY MR. W. H. MILLER, SECRETARY AND TREASURER OF THE KANSAS CITY BOARD OF TRADE, IN REGARD TO THE COMMERCIAL, INDUSTRIAL, AND TRANSPORTATION INTERESTS OF THAT CITY AND OF THE AREA TRIBUTARY TO IT.

BOARD OF TRADE,
Kansas City, Mo., July 1, 1884.

Hon. JOSEPH NIMMO, Jr.,
Chief of Bureau of Statistics, Washington, D. C.:

DEAR SIR: In rendering you a report of the commerce of Kansas City for the year 1883, it is a pleasure to invite attention to the evidences it presents of continued commercial development at this point. The comparative newness of our city and the country with which we trade, and the rapid settlement and development of the latter make our city peculiar in this respect. Kansas City long since attained a position of commercial pre-eminence in the Missouri Valley and adjacent country, so that the growth of the country is naturally reflected and epitomized in the growth of our trade.

I have endeavored in my annual reports to the Board of Trade to embrace such facts as could be obtained relative to the growth of the country. In this, however, I have never been able to secure as full reports as I would have desired, owing to the fact that of the States in which our trade chiefly lies, Kansas is the only one that attempts to collect really valuable information respecting the crop yields and the annual increase of population. The information I collect on this subject covers Missouri, Iowa, Kansas, Nebraska, Colorado, Wyoming, and Texas, and embraces the population, assessed valuation, and the numbers of horses, cattle, hogs, and sheep, and the crop yields of Kansas alone. I have never been able to obtain a report from New Mexico, in which we have a large trade, and have found it impracticable to discriminate between those parts of the States included that our trade penetrates and those parts which it does not. These facts for the whole of these States, however, serve to illustrate the progress of the country in which we trade, and therefore I introduce this report, with a comparative statement of the totals for the years 1882 and 1883, as follows:

	1882.	1883.
Population ..... number..	7,049,534	7,178,362
Assessed valuation	$1,873,504,033	$1,957,978,671
Horses ..... number..	3,103,580	3,256,049
Cattle ..... do....	11,957,762	13,621,684
Hogs ..... do....	8,175,790	8,046,669
Sheep ..... do....	8,258,625	9,303,186

These items all show an increase except that of hogs, which is the most fluctuating of all animal productions, partaking more of the nature of an annual crop than in the case of any other animal. The increase of population here stated belongs to Kansas alone, the figures for the other States not having been changed since the census of 1880. The increase here shown will be seen to be considerable, especially in assessed valuation and cattle and sheep. The assessed valuations, however, are in large part for two years, the real estate assessments being made only biennially.

Statistics for the city alone will show a higher per cent. of growth than is shown in those of the country, a fact due partly to the increasing concentration of trade here as the city grows larger and becomes more valuable to the country as a market and source of supply. The population of the city and the adjacent grounds which have been platted into lots (the city has outgrown its corporate limitations) was 93,773, the 1st of June, 1883, having risen to that figure from 80,040 the 1st of June, 1882. June 1, 1884, it had further risen to 113,736, an increase during the year of 19,963. Wyandotte and Armandale, which are situated just across the Kansas River

and which are commercially a part of the city, have now a population of 14,084, making the total population of this commercial center 127,820.

The assessed valuations within the corporate limits were, in 1883, $26,755,315, and in 1884, $30,900,000, an increase in one year of $4,244,685. The building permits issued increased from 1,071 in 1882 to 1,172 in 1883. This increase relates to building done within the corporate limits alone, and does not embrace a very large amount of building done outside of the corporate limits. The money invested in buildings, for which permits were issued, increased from $2,074,109 in 1882 to $2,583,295 in 1883. Our bank clearings increased from $98,135,590 in 1882, to $132,501,100 in 1883. The increase in other items relating to city growth for the same period were: Internal revenue collections, from $612,345.25 to $1,151,279.93; post-office receipts, from $178,508.81 to $197,605.13; real estate transfers, from $8,313,275 to $8,601,936, and custom collections, from $211.59 to $33,845.35.

The growth of our market is shown in the following comparative statement of the receipt of leading articles:

		1882.	1883.
Grain	bushels..	15,250,917	22,047,946
Flour	barrels..	226,867	279,218
Cattle	number..	439,671	460,598
Hogs	do....	963,036	1,379,005
Sheep	do....	80,724	119,180
Horses and mules	do....	11,716	19,860

The growth of the packing business, which is one of our leading industries, and one in which we rank as second only to Chicago, is shown in the following comparative statement:

Disposition.		1882.	1883.
Slaughtered:			
Hogs	number..	749,083	1,056,116
Cattle	do....	65,116	74,314
Sheep	do....	14,455	56,358
Shipped:			
Bacon	pounds..	74,376,595	135,975,218
Lard	do....	20,193,864	37,775,434

The reported list of articles received and forwarded by transportation lines being necessarily limited, the best available indication of the increase of our commerce in general is, perhaps, the tonnage moved by the railroads. The total tonnage delivered at Kansas City during the year 1883 was 5,460,396,081 pounds, as against 4,573,205,041 in 1882, an increase of 10.93 per cent.; and the total tonnage forwarded from here in 1883 was 4,395,565,221 pounds, as against 3,521,868,260 in 1882, an increase of 19.79 per cent.

TRANSPORTATION FACILITIES.

Since my last report to you the Kansas City, Springfield and Memphis Railroad has been completed, and was opened in November, 1883. This road was built by the Kansas City, Fort Scott and Gulf Railroad Company, and is practically a part of that road, diverging from the old line at Fort Scott and running in a southeasterly direction through Springfield, Mo., to Memphis, Tenn. This is the only important addition to our transportation facilities since my last report. The system of transportation facilities centering at and diverging from Kansas City may therefore be described as follows, the lines being grouped into north, south, east, and west lines for the purpose of more accurately describing our commerce by the direction from which it is received or to which it is sent:

NORTH ROADS.

The Kansas City, Saint Joseph and Council Bluffs Railroad.—This road runs along the east bank of the Missouri River between Kansas City and Council Bluffs, Iowa, and Omaha, Nebr., a distance of 200 miles. It has three branches; one from Amazonia, Mo., to Hopkins, Iowa, connecting at the latter place with the main line of the Chicago, Burlington and Quincy Railroad for Chicago and all points on that line; one

gelow, Mo., to Burlington Junction, Mo., on the Omaha line of the Wabash
nd one from Corning, Mo., to Westboro', Iowa. It runs through the impor-
vn of Saint Joseph, Mo., and Hamburg, Iowa, and touches at Leavenworth
chison, Kans., and Nebraska City, Nebr. It crosses branches of the Chicago,
sland and Pacific at Beverly and Winthrop, Mo., and connects with the Atchi-
d Nebraska Railroad at Atchison, Kans., for Falls City, Weymore, Lincoln, and
l Island, Nebr. In connection with the latter road from Atchison to Weymore
used by the Chicago, Burlington and Quincy as part of their line between
sas City and Denver, Colo. It is the property of the Chicago, Burlington and
acy, and is operated in connection with their widely ramifying lines in Illinois,
a, Missouri, and Nebraska. It exchanges freight and passengers with the Atchi-
and Nebraska and Central Branch Union Pacific at Atchison, Kans., with the
int Joseph and Des Moines at Saint Joseph, Mo., with the Chicago, Burlington and
d Quincy at Hopkins, Hamburg, Nebraska City, and Pacific Junction, and with
e Union Pacific, Chicago, Rock Island and Pacific, Chicago, Milwaukee and Saint
'aul, Chicago and Northwestern, between Council Bluffs and Omaha, at Council Bluffs; and
ver the Northwestern, and Saint Paul and Missouri Valley Junction, with
the Sioux City and Pacific for Sioux City, Yankton, and all railroad points in South-
ern Dakota.

The Missouri Pacific Railway.—This road, running from Saint Louis through Kansas
City to Omaha, Nebr., along the south and west shore of the Missouri River, forms a
second north line from this city. It runs directly through the important towns of
Leavenworth, Atchison, and Hiawatha, Kans., and Falls City, Nebr., terminating at
Omaha. It connects with the Kansas Central at Leavenworth, the Central Branch
Union Pacific at Atchison, and Saint Joseph and Western at Hiawatha. The first two
of these roads belong to the Missouri Pacific system, and it exchanges freight and
passengers with the other as it does also with the Central Branch Union Pacific and
Atchison and Nebraska roads at Atchison, and the Chicago, Burlington and Quincy,
Chicago, Rock Island and Pacific, Chicago, Milwaukee and Saint Paul, Chicago and
Northwestern, Saint Paul and Omaha, and Sioux City and Pacific, and Union Pacific at
Omaha.

These two north roads, with their branches and connections, give the trade of
Kansas City access to all points in Northwest Missouri, Southwestern and Western
Iowa, Northwestern and Northern Kansas, and the State of Nebraska; and the Coun
cil Bluffs road, as above mentioned, forms part of the Chicago, Burlington and Quinc
through line to Denver, Colo.

SOUTH ROADS.

The Kansas City, Fort Scott and Gulf Railroad, and the Kansas City, Springfield
Memphis Railroad.—This line extends southward from Kansas City to the s
line of the State of Kansas, one arm, which bears the second name given abov
verging at Fort Scott, Kans., and crossing Southwestern Missouri and Norther
Arkansas, terminates at Memphis, Tenn. It has four branches, one from Pleas
Kans., to Rich Hill and Carbon Centre, Mo.; one from Girard, Kans., to Joplin
one from Cherokee to Cherryvale, Kans., and one from Arcalia, Mo., on the
City, Springfield and Memphis line to Wier City, Kans., on the Girard and
line. On the main line are situated the important towns of Olathe, Paola, Ple
Fort Scott, Cherokee, Columbus, and Baxter; and on the branches, Parson
and Joplin, Mo., and on the Springfield and Memphis arm the two citi
names give name to that part of the road. It crosses branches of the Misso
Railway at Paola and Fort Scott, Kans., and Lamar, Mo., and the Saint Lou
Francisco at Columbus, Kans., and Springfield, Mo., with all of which it
freight and passengers. The Memphis line connects at Memphis with the
tering at that city for all points south of the Ohio River and east of the
and especially with the Memphis and Charleston road, which, together w
Tennessee, Virginia and Georgia, makes a through line to Norfolk, Va.
The Kansas City, Lawrence and Southern Kansas Railroad.—This roa
ward from Kansas City through the second tier of counties in Kansa
line of the State at Coffeyville. At Cherryvale, in Montgomery Count
line diverges to the west, terminating at Harper, in Harper County.
branch runs northward to Lawrence, connecting there with the Atchis
Santa Fé and Kansas Division of the Union Pacific, while another,
southwest, terminates at Burlington on the Junction City line of the
Railway. Another branch from Chanute runs eastward to Girard on
Scott and Gulf Railroad, and one from Wellington runs south
different lines pass through and connect the importan
Burlington, Garnett, Iola, Chanute, Girard, Ind
Hunnewell, and Harper, and connects
Kansas. It crosses one bra

'acific Railway at Ottawa, another at Iola, and another at Chanute, while its Burngton branch intersects the latter line at Burlington. It also crosses one arm of the tchison, Topeka and Santa Fé at Olathe, and the Saint Louis and San Francisco ad at Cherryvale, with all of which it exchanges freight and passengers. This road s attempted, with some success, to do business with Northwestern and Central Arnsas, using the line of the Saint Louis and San Francisco road from Cherryvale east, the way of Pierce City and Plymouth, Mo., thence south to Van Buren, Ark., here connection is made with the Little Rock and Fort Smith Railroad for Little ck and Pine Bluff, Ark., and Memphis, Tenn.

The Missouri Pacific Railway.—The line of this road which serves as a south line m this city diverges from the main line toward Saint Louis at Pleasant Hill, Mo., out 30 miles southeast of this city, and runs directly south to Joplin, Mo. It crosses at line of the Missouri Pacific which was formerly known as the Missouri, Kansas d Texas at Nevada, Mo., by way of which through trains, freight and passengers, e run to Texas, in connection with the Gould roads in that State, intersecting and changing freight and passengers with all other roads so as to give Kansas City close nnection with all railroad points in that State.

EAST ROADS.

The Hannibal and Saint Joseph Railroad.—This road runs from Kansas City to annibal, Mo., and Quincy, Ill., at which point it connects with the Chicago, Burgton and Quincy for Chicago, the Wabash, Saint Louis and Pacific for Toledo and e east, and the Saint Louis, Keokuk and Northwestern for Keokuk and Burlington, wa. It has one branch from Cameron to Saint Joseph, which, however, does not in a direction to be of value to the trade of Kansas City.

The Chicago, Rock Island and Pacific Railroad.—This road runs from Kansas City Chicago, with a line from Davenport west to Omaha, Nebr., and one from Cameron, o., west to Leavenworth, Kans., branching from Edgerton, Mo., to Atchison, Kans. uses the track of the Hannibal and Saint Joseph Railroad from Cameron to this city d to Saint Joseph. None of its branches are of value to Kansas City.

The Chicago and Alton Railroad.—This road lies between Kansas City and Chigo, and Kansas City and Saint Louis, crossing the Missouri River at Glasgow, and e Mississippi River at Louisiana, recrossing the Mississippi River at Saint Louis. is an excellent line to both of those cities.

The Wabash, Saint Louis and Pacific Railway.—This road runs from Kansas City Saint Louis, Chicago, Toledo, and Detroit. In Missouri it has a branch from Richond to Saint Joseph, one from Brunswick to Omaha, and one from Moberly northard to the Iowa line, where it connects with the Iowa Central. These branches, owever, lie in the wrong direction to be serviceable to Kansas City, yet they are all sed more or less in our trade.

The Missouri Pacific Railway.—The main line of this road serves as an east line om Kansas City, lying directly between Kansas City and Saint Louis. It has one ranch from Independence to Lexington, which is valuable to our trade in the central art of Missouri, and two others diverging from its southern side, which are not adantageous to us. One of these diverges at Holden, Mo., and runs through Paola to ttawa, Kans., branching again from Paola through Garnett to Le Roy, Kans. The ther is the old line of the Missouri, Kansas and Texas road, from Hannibal, Mo., rossing the main line at Sedalia, and running through Nevada and Fort Scott, to arsons, Kans., where it unites with the old line of the Missouri, Kansas and Texas, om Junction City, Kans., and pursues its way across the Indian Territory into exas. This line is valuable to our trade only from Nevada, Mo., southward, being part of one of the southern lines above described. It is also used in a limited way y our distributive trade from Sedalia northeastwardly toward Hannibal.

WEST ROADS.

The Union Pacific, Kansas Division.—This is the old Kansas Pacific road, from Kanas City and Leavenworth to Denver, Colo., the Kansas City and Leavenworth arms niting at Lawrence, Kans. It connects by two distinct lines from Denver with the ain line of the Union Pacific—one at Cheyenne and the other at Hazard, Wyo. It lso connects with the Colorado system of railroads centered at Denver for all railroad oints in that State. Its branches in Kansas are from Lawrence to Carbondale, om Junction City to Concordia, from Salina to McPherson, and from Solomon Beloit. It thus opens to the trade of Kansas City the central part of Kansas from ast to west, and all of Colorado and Wyoming, and affords through connections to tah, Nevada, and the Pacific coast.

The Atchison, Topeka and Santa Fé Railroad.—This line runs westward from Kanas City, through Kansas, Colorado, New Mexico, and Mexico, to Guaymas, on the acific coast. At Deming, N. Mex., it connects with the Southern Pacific Rail-

road for all points on that line and on the line of the Atlantic and Pacific Railroad in Arizona and California. At the eastern end it has one arm from Pleasant Hill, Mo., to the main line at De Soto, one from Atchison to the main line at Topeka, and one from Leavenworth to the Atchison arm at Meridian. It connects at El Paso, N. Mex., with the Mexican Central for the City of Mexico. The main line from Kansas City west passes through the important towns of Lawrence, Topeka, Emporia, Newton, Great Bend, and Dodge City, Kans.: Pueblo, Las Animas, and Trinidad, Colo.; Las Vegas and Deming, N. Mex.: and Benson, Ariz. Its branches are from Burlingame northward to Manhattan, from Florence southward to Douglas, passing through the important town of El Dorado; from Florence northward to McPherson, passing on to Ellinwood, on the main line; from Newton southward to Arkansas City and Caldwell, passing through the important towns of Wichita and Winfield: from Emporia southward to Howard; from Wichita to Kingman; from Laney to Santa Fé and from Rincon to El Paso. It connects with the Denver and Rio Grande at Pueblo, Colo., for all points on that line in Colorado and Utah, and at Las Lunas, N. Mex., with the Atlantic and Pacific for all points on that line in Northwestern New Mexico and Northern Arizona.

The Chicago, Burlington and Quincy, or, more correctly speaking, the Burlington and Missouri River Railroad, in Nebraska, properly belongs also to our west roads but as its connections with this city are made over the tracks of the Atchison and Nebraska road from Wymore, Nebr., to Atchison, Kans., and the Kansas City, Saint Joseph, and Council Bluffs from Atchison to Kansas City, its business at this city is embraced in the statement of the latter road, and cannot be separated from it. This line, employing the two roads mentioned from this city to Wymore, and the Denver line of the Burlington and Missouri River road in Nebraska, does a Colorado business in competition with the Union Pacific and the Atchison, Topeka and Santa Fé. At Denver it connects with the Colorado system of railroads, but especially with the Denver and Rio Grande, over which it makes connections to Utah and the Central Pacific, and so does a considerable Pacific coast business.

POOLING ARRANGEMENTS.

With this description of the railroad system centering at and radiating from Kansas City, it will be proper next to state the different pooling arrangements among them. Here it must be observed that a statement of the pooling situation can be given better than a statement of the pooling arrangement actually existing, for while the situation which gives rise to a pool continues substantially unchanged from year to year the actual arrangements among the roads change from time to time according to circumstances.

The first in importance of the pooling situations is that which gives rise to the Southwestern Railway Association, and which embraces all the lines and covers all business between Kansas City, Leavenworth, Atchison, and Saint Joseph, on the one hand, the so-called Missouri River points and all points on the Mississippi River from Saint Louis to Davenport inclusive, on the other hand. This pool embraces the Missouri Pacific, Wabash, Saint Louis and Pacific, Chicago and Alton, Hannibal and Saint Joseph, Chicago, Rock Island and Pacific, and Kansas City, Saint Joseph and Council Bluffs roads. These roads all reach Kansas City. The Missouri Pacific, Kansas City, Saint Joseph and Council Bluffs, and Chicago, Rock Island and Pacific all reach Leavenworth, Atchison, and Saint Joseph, and the Wabash reaches Saint Joseph. The Missouri Pacific reaches Saint Louis and Hannibal; the Wabash reaches Saint Louis; the Chicago and Alton reaches Saint Louis and Louisiana; the Hannibal and Saint Joseph reaches Hannibal and Quincy; the Chicago, Rock Island and Pacific reaches Davenport, and the Kansas City, Saint Joseph and Council Bluffs, by its connection with the Chicago, Burlington and Quincy, at Hopkins, reaches Burlington. Competition between these roads for business between points common to them on the Missouri River and common points on the Mississippi River, or farther east, presents a situation in which a pool among them is deemed the best method of protection against each other. The arrangement now existing is a revenue pool, and involves a percentage division of the gross earnings of all on all business between the points named on the Missouri and Mississippi Rivers. The business is exchanged at the Mississippi with connecting roads to the East, or is carried in the territory beyond by such lines as cross the river to common commercial centers. This pool embraces all business arising or distributed in the territory west of the Missouri River, except Colorado, California, Arizona, and Mexico. The branches of the Missouri Pacific Railroad above described as diverging from the main line at Holden and Sedalia, and running into Southern Kansas, make junction points with the Kansas City, Fort Scott and Gulf, and Kansas City, Lawrence and Southern roads at Burlington, Chanute, Emporia, Fort Scott, Garnett, Humboldt, Ottawa, Paola, Parsons, and Walnut, which, to protect the business of the Southwestern Association, are pooled with it, the Missouri Pacific accounting to the pool for its business at such points and receiv-

ing a percentage therefor. The Saint Louis and San Francisco Railroad also enters the State of Kansas at Brownsville, and penetrates westward to Wichita and Halstead, competing for business with the Kansas City, Fort Scott and Gulf, Kansas City, Lawrence and Southern, and Atchison, Topeka, and Santa Fé Railroads. To protect the business of the Southwestern Association, through rates are made between junction points on this road and common points east of the Missouri River, which are a little less than the sum of the two local rates by the way of Kansas City, and just equal to the rates of the Saint Louis and San Francisco road. Similar through rates are made on the lines of the Kansas City, Fort Scott, and Gulf, and Kansas City, Lawrence and Southern roads at points of junction with the above-named branches of the Missouri Pacific Railway. This is done for the protection of those two roads, the Southwestern Association being protected by the pooling of the business of the Missouri Pacific at such junction points. In the case of through rates from junction points on both the Saint Louis and San Francisco and branches of the Missouri Pacific the through rates are regulated by the rates of these roads, and are very little less than the sum of the two local rates by the way of Kansas City. A similar through rate is made by the Atchison, Topeka and Santa Fé Railroad and the Southwestern Association for live stock business arising in the Pan Handle of Texas and the Indian Territory, to meet competing rates of roads in that section leading directly to Saint Louis. Aside from these, there are no through rates on any of the roads west of the Missouri River points, nor on the roads farther north, less than the sum of the two locals. To further protect the business of the Southwestern Association, the business of the Atchison and Nebraska road, running northwest from Atchison, is pooled with it as far north as Tecumseh, Nebr., when done by the way of Atchison.

The so-called tripartite agreement prevailing at Omaha is the only other pool affecting business between the east and west of the Missouri River. The roads involved in this pool are the Chicago and Northwestern, Chicago, Milwaukee and Saint Paul, the Chicago, Rock Island and Pacific, and the Wabash, Saint Louis and Pacific, on the eastern side of the river, and the Union Pacific Railroad on the western side. It is an agreement to exchange all their business at Omaha between the four roads mentioned on one hand and the Union Pacific on the other, the four roads east of the river dividing among themselves the business delivered to them by the Union Pacific. This pool leaves out the Chicago, Burlington and Quincy Railroad, which competes with the pool lines at points east of the Missouri River and with the Union Pacific at points west. However, it maintains rates. This tripartite agreement takes the place of the old Iowa pool, which prevailed for a good many years between Omaha and Chicago, and which was of much the same character as the Southwestern Association above described. Lines that feed both the Southwestern Association and the tripartite agreement roads from east of the Mississippi River and west of the Missouri meet and compete at points quite distant from the rivers. They do not, so far as I can learn, have any agreement with reference to such competitive business, but they maintain equal rates, so that shippers at such points whose freight may go by either set of lines have their choice of routes at the same rate.

The next pooling situation of importance was created by the completion of the Kansas City, Springfield and Memphis Railroad to Memphis, Tenn., last November. It immediately made connecting arrangements with the Memphis and Charleston, East Tennessee, Virginia and Georgia, and Norfolk and Western Railroads, by which it opened a through line from Kansas City to Norfolk, Va., and began to compete with the northern trunk lines for sea-board business, and for business at all intermediate points in Kentucky, Tennessee, Virginia, and the South Atlantic and Gulf States. This affected the business of the trunk line pool on the east and the southwestern pool connections in the interior, and brought about the present arrangement, which consists of an agreement whereby the southwestern and trunk line pool roads and connections charge local tariff rates on all business crossing the south line of Kentucky and Virginia, and the Kansas City, Springfield and Memphis Railroad and connections charge local tariff rates on all business crossing the same line. This, of course, favors the business of the Kansas City, Springfield and Memphis Railroad and connections in the country south of Kentucky and Virginia, but shuts it out of business in those two States and the country north, and breaks up the through line to Norfolk. This can hardly be called a pool; it is more strictly speaking a division of territory and business, but it affords Kansas City decided advantages for trade in the country east of the Mississippi River and south of Kentucky and Virginia.

The next most important pooling situation arises from the competition of the Atchison, Topeka and Santa Fé Railroad, the Union Pacific Railroad, and the Chicago, Burlington and Quincy, or rather the Burlington and Missouri River Railroad, in Nebraska, for the business of Colorado, Wyoming, Utah, Nevada, and California, with points on and east of the Missouri River. This business was formerly covered by a pool among these roads, and is supposed to be so yet, though rates have been cut materially, and the pooling agreement has become practically inoperative. This pool was

organized on about the same basis as the Southwestern Association, except that it covered both freight and passenger business between all points in the territory above named and the terminal points of these roads on the Missouri River. It has not yet been formally dissolved, but its terms are no longer adhered to. Rates have been cut and met by the different lines, but remain about the same over all routes, and through rates between points in the territory named and points east of the Missouri River are made by the addition of the two local rates prevailing east and west of that stream.

Beside the pooling situation and pools now described, there exists a number of smaller situations and agreements in Southeastern Kansas and Southwestern Missouri, where the Saint Louis and San Francisco Railroad and branches of the Missouri Pacific Railway make junction points with the main lines and branches of the Kansas City, Fort Scott and Gulf, Kansas City, Springfield and Memphis, Kansas City, Lawrence and Southern Kansas, and Atchison, Topeka and Santa Fé Railroads. Business at such points is usually covered by some kind of an agreement for the maintenance of rates, the physical division of freight, or a percentage division of revenues. These arrangements, however, are purely local in their scope, each covering but one point, and having no perceptible effect on the business of Kansas City.

There is nothing in these various pooling arrangements that can be said to operate to the detriment of Kansas City's trade. It is true that the through rate from junction points in Southern Kansas to points east, which are lower than the sum of the two local rates by way of Kansas City, may appear to be so, but they cannot be so regarded when we remember that the lines which compete at such points with Kansas City lines and make such rates necessary are shorter than the route by way of Kansas City. The existence of such rates enables Kansas City men to handle much of the commodities passing between such points and points east through Kansas City which otherwise would take the shorter route and be handled by others. Besides, the difference between such through rates and the sum of the two locals is usually so slight as to allow Kansas City to compete with other places for the trade. Rates on the line of the Saint Joseph and Western Railroad from Saint Joseph west, on the Central Branch Union Pacific Railroad from Atchison west, and on the Kansas Central Railroad from Leavenworth west to Kansas City is the sum of the two local rates from points on such roads to Saint Joseph, Atchison, and Leavenworth and thence to Kansas City, except at such points as Clay Center, Concordia, Minneapolis, and Beloit, Kans., which are junction points with branches of the Kansas Division of the Union Pacific Railroad. These roads exchange business with the Southwestern Association roads at Saint Joseph, Atchison, and Leavenworth on the same basis that the exchange would be made at Kansas City; hence such of that business as arises or terminates at Kansas City has the disadvantage of the local rate between Kansas City and the exchange points. This situation embarrasses the trade of Kansas City to some extent along the lines of the roads named, and gives corresponding advantages to Saint Joseph, Atchison, and Leavenworth. Still, from the fact that in most lines of merchandise Kansas City has the larger and more varied stocks, and from the fact that we afford the larger market for the products of the country, we maintain a large business with the people along the lines of these roads.

THE DIRECTION OF TRADE.

With this description of the transportation lines, pooling arrangements, and rate situations, the distribution of the commerce of Kansas City can be comprehensibly stated. The city has the largest market in the Missouri Valley country for all of its productions, and its nearness to the country, the briefer time required for effecting exchanges and receiving returns, and the attractive power of its commercial force brings hither much of these products from points where the rates are not favorable. Similar facts favorably affect our distributive trade. This is especially the case where the competitive point is distant. The live stock of the western part of Missouri, Southwestern Iowa, Southern Nebraska, Kansas, Colorado, New Mexico, Texas, Indian Territory, and Northwestern Arkansas finds here its principal market, while we compete in Central Missouri with Saint Louis and Chicago, and with Chicago in Central and Northwestern Iowa, Northern Nebraska, Montana, Wyoming, and Utah. The cereal, soil, dairy, and barn-yard products of a smaller area of Missouri and of Central Kansas find here their principal market, while we compete for like products in Southeastern Kansas, Southwestern Missouri, Northern Kansas, and Nebraska. It is also the principal market for the fruit of Western Missouri, Kansas, and Northwestern Arkansas, and for the coal of Western Missouri and Southeastern Kansas. These articles are distributed from here in various directions. Our grain largely goes east to lake and sea-board markets, but there is a large distributive movement of wheat to the mills in all the Western, Northwestern, Southwestern, and Southern States; of corn to the Southern States; and of oats to the Southern States and the mining States of the West. Vegetables, fruits, and dairy and barn-yard products are distributed to points in Colorado, New Mexico, Texas, and the Southern States. Cattle, sheep, and, to some extent, hogs are distributed to the feeding districts of

Missouri, Iowa, Illinois, Indiana, and Ohio, and to such markets as Chicago, New York, Detroit, Buffalo, Philadelphia, and Boston. Hogs are mostly packed here. Cattle and sheep also are largely slaughtered here, as will be seen in the packing-house figures above given, and are distributed from here both as packed and fresh meats. Our packing-house products have probably the widest distribution of any product of this country, going, as they do, into all the mining districts of the Rocky Mountain country, and to California, Oregon, and Arizona on the west, to Texas, Indian Territory, Arkansas, and South Atlantic and Gulf States on the south, and to the eastern markets of our own country and to Europe. Kansas City is the principal source of supply of these articles for the country west and southwest of the Missouri River, meeting the competition of Chicago in the Northwestern States, of Saint Louis in the Southwestern, and of Saint Louis, Cincinnati, and Chicago in the South Atlantic and Gulf States. Our coal is distributed in Kansas, Nebraska, Northwestern Missouri, and Southwestern Iowa. Flour, for which this has become a large market for the mills of Western Missouri, Kansas, and Nebraska, is distributed into the mining districts of the West, into Texas, the South Atlantic and Gulf States, and to the Atlantic sea-board markets.

The merchandise handled in Kansas City is obtained by our merchants from manufacturers in the East and Northwest and from importers in the sea-board cities. But little of it is obtained from jobbers in other cities. It is distributed through Western Missouri, Southwestern Iowa, Southern Nebraska, Kansas, Colorado, New Mexico, Arizona, Texas, Indian Territory, and Arkansas. To the Northwest we meet the competition of Chicago, and to the East, South, and Southwest the competition of Saint Louis. In Northwestern Missouri and Southwestern Iowa we meet the local competition of Saint Joseph, Mo. In Nebraska we encounter the competition of Saint Joseph and Omaha, and in the Central part of Northern Kansas, that of Leavenworth and Atchison. The competition of Saint Joseph, however, is confined chiefly to dry goods, groceries, and drugs; that of Omaha and Atchison to dry goods and groceries; and that of Leavenworth to hardware and furniture. The restrictive effect of the competition of these cities upon our trade is insignificant, Saint Louis and Chicago being our principal competitors, except in the case of the larger houses in the larger towns, which deal more or less with New York and the Eastern cities. The competitive influence of Denver is felt to some extent in the mining districts of Colorado. Such is the general range of our distributive mercantile trade and the competition with which it meets. Kansas City, however, is the principal source of supply for Kansas, Colorado, New Mexico, Indian Territory, Northern Texas, Southwestern and Western Missouri, and Northeastern Arkansas.

The proportion of our receiving and distributing trade, which lies, in different directions, is shown in the following statement:

Aggregates received and forwarded.

Lines.	Received.	Forwarded.
NORTH ROADS.	*Pounds.*	*Pounds.*
Kansas City, Saint Joe and Council Bluffs Railroad	373, 862, 577	299, 928, 555
Missouri Pacific Railway, north	353, 000, 000	225, 000, 000
Total	726, 862, 577	524, 928, 555
SOUTH ROADS.		
Kansas City, Fort Scott and Gulf Railroad	909, 644, 098	252, 943, 356
Kansas City, Lawrence and Southern Kansas Railroad	442, 537, 532	243, 484, 654
Missouri Pacific Railway, south	100, 000, 000	105, 000, 000
Total	1, 452, 181, 630	601, 428, 010
EAST ROADS.		
Missouri Pacific Railway, east	150, 027, 661	180, 017, 461
Chicago and Alton Railroad	561, 333, 945	777, 801, 982
Wabash, Saint Louis and Pacific Railroad	396, 154, 440	654, 800, 282
Chicago, Rock Island and Pacific Railroad	240, 554, 054	169, 153, 822
Hannibal and Saint Joe Railroad	382, 423, 753	366, 013, 742
Total	1, 730, 493, 853	2, 147, 787, 287
WEST ROADS.		
Union Pacific Railroad, Kansas Division	811, 741, 191	392, 584, 744
Atchison, Topeka and Santa Fé Railroad	739, 116, 830	728, 836, 623
Total	1, 550, 858, 021	1, 121, 421, 367

Percentage by direction.

Direction.	Received.	Forwarded.
North	12.31	11.92
South	26.60	12.92
East	31.68	48.86
West	28.40	25.31

The growth of our commerce from year to year for the past seven years is indicated in the following statement of the gross freight received and forwarded:

Annual movement and increase.

Year.	Received.	Increase.	Forwarded.	Increase.
		Per cent.		*Per cent.*
1877	1,852,900,694	.....	1,621,900,538	.....
1878	2,425,904,917	30.92	2,088,366,446	25.60
1879	3,188,710,298	31.40	2,739,752,881	34.40
1880	4,029,344,019	26.04	2,911,892,163	6.65
1881	4,228,202,063	4.93	2,794,947,545	*4.01
1882	4,873,805,041	15.26	3,521,868,260	26.00
1883	5,460,396,081	10.93	4,395,565,221	19.79

* Decrease.

THE RIVER.

The Missouri River, which was once a great channel of commerce in this country, has nearly fallen into disuse, owing to the superior competition of the railroads. For a number of years past but few boats have attempted to do business on its waters, and these have found most encouragement from points apart from railroads. This season, so far, but three boats have been plying on the river between Kansas City and Saint Louis, and a like number between Sioux City and Fort Benton, with none at all on that part of the river between Kansas City and Sioux City. These boats do not affect railroad rates, except in isolated cases where they make rates for some special consignment, which rates are usually met and the consignment taken by the railroad without any disturbance of prevailing rail rates. The river, therefore, is now scarcely a commercial channel, and does not exercise any regulative influence upon railroad rates. It is hoped and believed, however, that this situation will be ultimately changed by the improvement of the river. A careful survey of the stream, by Army engineers, shows that with an expenditure of $10,000 per mile a minimum depth of water of 12 feet and a reliable channel can be secured. With such improvement it will be safe and easy for barge navigation, will have a carrying capacity more than equal to all our east roads, will reduce rates largely, make the river again a greater channel of water than it ever was, and a most potent regulator of rail rates. Such improvement is regarded by the Missouri Valley people as of the highest value and utmost importance, both in a local and national sense, and they are annual supplicants at the doors of Congress, which controls it, for appropriations for that purpose.

Very respectfully, your obedient servant,

W. H. MILLER,
Secretary.

APPENDIX No. 75.

STATEMENT PREPARED BY CHARLES BURDETT HART IN REGARD TO THE COMMERCIAL AND INDUSTRIAL INTERESTS OF THE KANAWHA VALLEY OF WEST VIRGINIA.

The rich valley of the Great Kanawha River is a striking example of the immediate and great commercial value resulting from the intelligent application of the resources of the National Government, a river, for a great part of the year merely picturesque, tumbling over the rocks and shoals, of comparatively small economic value, has had imparted to it majesty and importance, so that now it has become an easy and cheap highway to the West and South. Under skillful direction what was once for the greater part a splendid waste has been developed into a river of trunk line importance, on which the coals of Kanawha and the valuable woods of the heavily timbered tributaries are borne speedily and safely to the ready markets that lie between the Great Kanawha and the Gulf of Mexico.

It is nine years since the Government of the United States began to improve the river by a system of locks and dams; three years earlier the Chesapeake and Ohio Railroad was opened on its southern bank. To these immediate causes the valley of the Great Kanawha, so richly endowed by nature, owes an awakened activity which is essentially a new birth. Salt-making, practiced time out of mind by the Indians to supply their own wants, and for nearly a century the one great employment of the valley, 1,600 barrels being produced daily while the industry was flourishing, has fallen into decay and little remains of it all but the blackened chimneys of furnaces in ruins. Improved methods may restore this once profitable industry, but for the present it is practically dead. Coal is the new king. Iron is just beginning to claim attention. Prospectors are exploring for petroleum which is believed to exist in vast deposits. Lumbering commands more and more attention.

The Kanawha coal trade may be said to have been born since the war, for previous to that time it was but an experiment on a small scale. The railroad and the assurance of the river improvement have touched the valley as with a magic wand. Capital has been attracted, but not yet as it will be when the great mineral wealth of this region shall be better appreciated, and the whole region has put on new life.

Less than twenty years ago all the business on the Great Kanawha River was done by two tow-boats, mainly used for towing back "empties," the coal barges in that day being run by hand to the mouth of the Kanawha and often through to Cincinnati. Four packets plied the river. The bulk of the shipments was made up of the splint coal of Coalburg and the cannel coal and crude cannel oil of Paint Creek. Now seventeen tow-boats find employment on the Kanawha, besides several whose business comes out of the Kanawha but begins where the river empties into the Ohio. There is one packet less running below Charleston, but four steamers find good business between Charleston and the Kanawha where formerly there was no business to be done. As the river improvement progresses the steamers go with it, giving to shippers of general merchandise and to travelers a choice between rail and water transportation. The Chesapeake and Ohio railroad single track has business enough for a double track road, and with this end in view is putting in long sidings; yet nearly all the coal traffic of the railroad is eastward, the westward shipments by rail being very small. Shipments for southern and western markets are by water, increasing in tonnage as the engineers push their improvements up the river. In fact the most striking feature of the wonderful recent development of this great coal-field is the intimate relation between the river improvement and new mining operations. Capital understands so well the worth of competition that it is unwilling to rely solely on an already overcrowded railroad which, under the most favorable circumstances, could offer little inducement for coal freights to southern and western markets already reached from Pittsburgh by the Ohio River. Capital waits impatiently for the river improvement, keeping well up with it, and displaying an intelligent desire to meet it with new mining operations and the great improvement of old ones. Costly river tipples are built for loading barges, so that as soon as the navigable water comes it may have the preference over the railroad. Operations, begun at certain points in advance of the river improvements, were abandoned, and have now been resumed to profit since

the water has been made navigable for their boats. It was found impracticable to compete by rail with the Pittsburgh region shipping by water, and besides operators were disinclined to rely entirely on a transportation company engaged as well in the buying and selling of coal. It is complained that preferential rates are made, to the detriment of small shippers; that preference is shown in furnishing cars; and that while the railroad company's own coal agency is always on the spot as a buyer for cash, where the operator must sell to the agency or not ship, the price paid is so low as to leave less than a living profit. This unsatisfactory condition obviously applies only to those mines which cannot ship by river, the river mines being free to sell where they can find a market. The river improvement is of special moment to the small operator, who must have quick returns and fair profits. He cannot afford to lock up his money in his output, nor can he afford to be practically forced to sell in one market when another, which he cannot reach, offers a better bargain. A steady business is of first importance to him. The fewer the interruptions the better his year's showing. The Kanawha improvement affords almost uninterrupted navigation through the year, and the distance to the Cincinnati market being short, so that the trip can be made in a week from mine to market and back, the operator can afford to load his barge with 4,000 or 4,500 bushels; while the Pittsburgh shipper, by reason of the greater distance, must load his barge with from 5,500 to 6,000 bushels to stand the cost of transportation.

The increased coal productions in a period of two years will give an idea of the effect of the improvement of the river on coal production. For the year ending June 30, 1881, the total shipments were 16,260,356 bushels; by rail, 6,631,660 bushels; by river, 9,628,696 bushels. For the year ending June 1, 1883, the total shipments were 28,660,713 bushels; by rail, 13,290,255 bushels; by river, 15,370,458. In 1881 thirteen mines were in operation; in 1883 twenty-seven; and the increase in number was in river-shipping mines. It will be observed that though the river shipments increased largely the greater percentage of increase in shipments was by rail, showing that while the river improvement encourages the operator to new and bolder undertakings, having this great competing highway at his command, he becomes also a willing customer of the railroad company, which enjoys a growing business by reason of the competition. Eleven of the twenty-seven mines in operation in 1883 did not ship by river, being situated above the navigable waters. They will be reached, however, by the pool to be made by Dam No. 2, 1 mile below Cannelton. In anticipation of this progress river tipples are being constructed. The largest shipper relies entirely on the river, the mines being located on the water bank and not reached by rail.

It has been found impossible to show by accurate statistical information so much as the approximate value of the river improvement to Kanawha lands, and this for reasons readily understood: First, the salt industry gave at one time great value to lands now almost worthless by reason of the decay of that industry; second, nearly all the value there is in these lands is owing to their rich deposits of coal; third, coal mining on a large scale is of a comparatively recent origin, and lands along the river or on the railroad have a value largely fictitious, depending greatly on the owner's ability to hold or desire to sell them; fourth, statistical information of this character has not heretofore been sought, and the best informed are almost entirely without data of this interesting and important character. Present prices vary according to location, thickness of seams, and quality of coal, varying from $10 to $50 an acre, within comparatively easy reach of navigation or the railroad. More remote tracts may be had from $2.50 an acre upwards. The best coal property may be leased at half a cent a bushel royalty, at which rate good coal land will yield the lessor about $500, developing the most desirable seam. It has been estimated that if all the seams were worked some of the best tracts would bring the lessor $4,000 an acre, but this has not been done.

A few instances will illustrate the enhanced value of coal property. Twenty years ago a tract of 1,700 acres was sold at $1 per acre. Later it brought $8,000, and the purchaser now receives from it $17,000 a year in royalty. Twenty years ago a certain tract was divided into bottom and hill land, the former selling at $3 an acre, the latter at $1. The hill land has since sold at $50 an acre, and now it cannot be bought for $200. It may be said that the present market value of Kanawha coal lands depends most of all upon the river improvement, of which property holders and lessees are so jealous that a proposition to bridge the river at Charleston for railroad purposes has been strongly opposed, in the fear that the bridge piers will obstruct navigation.

The extent and value of the coal measures of the Kanawha Valley are only beginning to be appreciated, and yet in this region is found the greatest development in the rich and growing State of West Virginia. Of the great Appalachian coal field, reaching from Northern Pennsylvania to Middle Alabama, embracing an area of nearly 59,000 square miles, believed to be the finest in the world, West Virginia possesses a greater share than any other State; and so far as indications show and development has gone, this is the heart of the coal-field of West Virginia. Anthracite alone ex-

cepted, coals of all varieties are found here—cannel, splint, bituminous of every kind, in seams of great thickness and extent. Some of the hills contain an aggregate of from 40 to 50 feet of coal in seams of from 2 to 11 feet in thickness, all above the water level; and in the back hills on the tributary creeks are seams of greater thickness. These numerous tributaries of the Kanawha cut the hills apart, exposing the coal on the surface, making mining easy and preparing a practical route for the narrow gauge railroad to run the output down to the great river. As the development of the field progresses narrow gauge roads are built up these creeks, primarily to market the coal of the back country, but at the same time contributing to the general public convenience. As they shall be pushed farther they will reach the rich pasture lands beyond, and still farther on it is hoped to tap the Norfolk and Western Railroad system. These narrow gauge railroads are in effect tributaries of the improved river, and they are becoming an important feature in the new life of the valley.

Black-band iron ore of great richness has been discovered and a furnace erected below Charleston for its manufacture. Iron is known to exist largely through the valley, but there is lacking a geological survey which shall determine more accurately than has yet been done the general location of the deposit. This much has been shown by the openings, but there are seams containing from 4 to 5 feet of good workable ore.

The lumber business is already large and is an industry with an assured future. The Kanawha and its tributaries drain vast areas of heavily timbered land in which abound black walnut, cherry, white oak, ash, hickory, maple, beech, poplar, chestnut and pine. It has been found impossible to ascertain the value of the lumber marketed; the estimates of intelligent men vary from $300,000 to $500,000, and are not to be relied on. This source of wealth has been, and will continue to be, largely benefited by the river improvement.

Shipments in 1883.

Shippers.	By rail.	By river.	Total.
Winifrede Coal Company	199,868	1,325,791	1,525,659
Robinson Coal Company	631,107	917,300	1,548,407
Crown Hill Splint Coal Company	610,260	272,604	882,864
Dana Brothers	.....	1,899,789	1,899,789
Mount Morris Coal Company	700,000	.....	700,000
Eagle Coal and Coke Works	1,497,810	.....	1,497,810
Coal Valley Coal Company	1,015,960	.....	1,015,960
The Saint Clair Company	190,000	.....	190,000
Bennington Colliery	.....	394,000	394,000
Cambell's Creek Coal Company	.....	3,070,463	3,070,463
Kanawha Mining Company	613,933	337,296	951,229
Cedar Grove Coal Company	.....	510,000	510,000
Peabody Coal Company	.....	1,012,234	1,012,234
Crescent Coal Mines	2,016,000	.....	2,016,000
M. T. Davis & Co	1,102,892	.....	1,102,892
Kanawha Cannel Coal Company	50,000	608,000	658,000
F. Faulkner	775,202	8,355	783,557
Cannelton Coal Company	1,068,046	.....	1,068,046
Henson & Talley	239,629	.....	239,629
Marmet Mining Company	.....	1,601,188	1,601,188
Pioneer Coal Company	.....	1,848,715	1,848,715
Wyoming Manufacturing Company	242,564	.....	242,564
G. Straughan (Coal Valley)	762,227	.....	762,227
G. Straughan (N. Coal b)	.....	960,000	960,000
Logan Coal and Salt Company	.....	400,000	*400,000
Carver Brothers	1,313,340	.....	1,313,340
Other parties	261,418	474,723	736,141
Totals	13,200,255	15,370,458	28,670,713

* Estimated.

APPENDIX No. 76.

STATEMENT IN REGARD TO THE MOVEMENTS OF PRODUCE TO AND FROM NEW ORLEANS, BY HENRY G. HESTER, SECRETARY OF THE NEW ORLEANS COTTON EXCHANGE.

A glance at the figures appended shows increased movements of produce to and from New Orleans by the principal trunk lines during the year 1883, compared with 1881, the last data published in the internal commerce reports:

Of the two roads in process of construction in 1882, one, the Northeastern, has been completed but a few months, and while it is now fully open to freight and passenger traffic, the extent of its business has not been of a magnitude sufficient to serve as an earnest of what may be expected from that source in the future.

The Mississippi Valley Railroad from New Orleans to Memphis is still incomplete, though it is expected to be prepared for business before the opening of the new commercial year in September next.

These lines will prove important elements in the competition for transportation of the products of the rich sections through which they extend, and in another year will undoubtedly add much to the commerce of New Orleans.

Following the bank of the Mississippi River for a distance of 452 miles, the latter road, which is part of the Great Huntington system, connects with the Chesapeake, Ohio and Southwestern from Memphis to Louisville, and thence by the Chesapeake and Ohio to Newport News, Va.

"Experienced railroad men," remarks the New Orleans Times-Democrat, "say that the New Orleans and Mississippi Valley road will be the most profitable line in the South, for the reason that its local traffic will be immense, and also because the entire length of the line is thickly populated, being more fortunate in this respect than the majority of the railroads in the South. From this city to Baton Rouge the road runs through a continuous row of sugar and rice plantations, and north of Baton Rouge on to Memphis it traverses the Deer Creek country of Mississippi and the finest cotton lands in the world. The development of a large scope of fertile country and the trade that will follow will be one of the many benefits that New Orleans will derive from the construction of the road."

It is too early to hazard any opinion as to the Huntington policy. The completion of the Mississippi Valley road will probably inaugurate a sharp competition between river and rail for the transportation of the bulky products of the fertile sections through which both avenues run side by side. An additional blow will be given to the passenger traffic by steamboat, and the facilities for rapid transit by rail will no doubt contribute toward the abolishment of the river palaces so elaborately fitted up with passenger accommodations.

The carrying trade by water of the Lower Mississippi will be largely conducted in a class of vessels built expressly for freight accommodations, and by means of barges, reducing the cost of handling under sharp competition to minimum figures compatible with reasonable profits.

It is doubtful how far this was ever accomplished in the past. Extreme low figures have prevailed in cases of a war of rates, but these, guided solely by a desire to win at any cost, not only could not serve even approximately as a criterion, but generally resulted in a return to charges as onerously high as they had been ruinously low.

The transportation of a handsome percentage of the products of the Lower Mississippi River proper has hitherto been conducted in these vessels partaking of the dual character of freight carriers and floating hotels. During the past year, however, more than 50,000 bales of cotton and other commodities have been transported by barge from Memphis to New Orleans. I have not data to give a statement of the latter movements, and merely mention them to show that a change of system has already commenced which, in all probability, will extend to the bulk of the carrying trade on the lower river. It has been a mooted question of late years as to the practical utility of the combination of the freight and hotel system, from the standpoint of profits in trade.

With the competition of the Mississippi Valley road the question will no doubt be speedily solved. It is not likely that the passenger business by water will be suffi-

cient to maintain the magnificent class of vessels hitherto in use, and the substitution of boats constructed solely with a view to economy in the handling and transportation of freights cannot but prove vastly beneficial to this section.

These conclusions all point to lower rates to the sea-board via New Orleans, and promise to strengthen this city as a competitor for a vast trade which has hitherto sought an outlet by other channels.

The competition of the two routes above named, and the final connection of New Orleans with the Pacific via the Southern Pacific system, places New Orleans in a better position to build up her import trade, which has languished for want of adequate facilities for quick and cheap distribution through the interior.

Powerful interests have been added by the construction of these new lines to the consideration of questions effecting the volume of imports via this city, and with such means at hand as place New Orleans on a more favorable footing than ever before in her history for handling merchandise between western centers and foreign markets we may expect an early and sensible increase by diversion from other routes and new trade which is likely to spring up from the wants of vast regions just opened up to us.

The business of the three leading routes compared with that of 1881, the date of the bureau's last report, is as follows:

Comparative statement of tonnage received at and forwarded from New Orleans via the Chicago, Saint Louis and New Orleans Railroad during years ending July 31, 1881 *and* 1883.

Articles.	Received.		Forwarded.	
	1883.	1881.	1883.	1881.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*
Agricultural implements, vehicles	4, 710, 727	1, 694, 038	224, 652	293, 283
Bagging	31, 495	97, 500	2, 181, 544	932, 695
Brick	13, 110, 700	3, 730, 120	97, 683	336, 804
Cotton	204, 310, 560	188, 179, 881	.....	192, 599
Cotton-seed oil cake and meal	9, 156, 349	5, 870, 909	4, 354, 493	664, 425
Cotton-seed	15, 063, 931	1, 590, 775	.....	166, 274
Cotton ties	450	50, 369	*6, 268, 238	2, 846, 380
Coffee	32, 479	21 773	8, 698, 343	14, 080, 278
Coal	44, 000	324, 000	3, 446, 720	1, 899, 650
Fruit, vegetables	23, 051, 756	19, 564, 871	35, 046, 201	35, 387, 119
Flour, meal	16, 587, 964	11, 143, 284	5, 065, 325	6, 134, 592
Fertilizers	.....	247, 530	6, 387, 876	3, 504, 914
Furniture	3, 005, 204	797, 904	679, 572	218, 271
Grain, wheat	180, 890	541, 231	.....	11, 565
Grain, corn	5, 582, 016	1, 615, 379	2, 256, 001	5, 184, 116
Grain, others	3, 378, 905	4, 442, 062	2, 065, 241	3, 168, 050
Hay-fodder	17, 523, 812	19, 471, 599	273, 699	476, 078
Hides	204, 082	103, 503	1, 688, 178	2, 222. 712
Hog products	45, 565, 270	36, 904, 960	3, 500, 931	4, 444, 217
Ice	664, 000	.....	.....	424, 104
Liquor, ale, beer	25, 549, 192	24, 962, 085	1, 642, 344	1, 997, 803
Timber, lumber	24, 016, 974	9, 679, 353	869, 924	610, 891
Molasses	434, 000	400, 674	45, 337, 788	40, 034, 553
Moss	93, 470	9, 500	1, 107, 598	667, 957
Machinery	8, 311, 705	2, 750, 923	774, 718	571, 043
Oil	10, 635, 525	6, 710, 987	2, 276, 412	2, 110, 908
Potatoes	13, 225, 628	7, 794, 879	3, 462, 418	3, 171, 703
Rice	41, 707	67, 324	15, 725, 282	17, 031, 239
Sugar	116, 929	99, 424	69, 991, 353	67, 512, 374
Salt	4, 000	2, 000	8, 066, 109	6, 657, 391
Laths, shingles	1, 000	39, 100	53, 340	369, 585
Stock, poultry	31, 887, 733	28, 812, 830	3, 054, 499	1, 371, 461
Hoop-poles Staves	5, 921, 287	4, 423, 000	20, 000	9, 475
Leaf tobacco	5, 644, 715	5, 890, 706	204, 538	6, 141
Wool	136, 471	27, 491	210, 466	116, 548
Wood	6, 416, 197	2, 281, 275	518, 893	.....
Miscellaneous	53, 643, 531	45, 103, 010	32, 936, 823	38, 953, 448
Total	579, 983, 760	435, 446, 319	268, 499, 592	263. 779, 647

Statement of freights received at and forwarded from New Orleans via the Louisville and Nashville Railroad for years ending June 30, 1883 and 1881.

Articles.	Received.		Forwarded.	
	1883.	1881.	1883.	1881.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*
Cotton	111,770,700	92,183,030	3,066,500	638,655
Corn	4,622,300	2,836,087	7,608,900	42,685,793
Wheat	33,000		150,900	
Other grains	1,183,000		5,550,000	
Hay and hemp	1,098,700	18,584,613	1,459,000	17,591,601
Potatoes and onions	4,655,500		2,149,800	
Fruit and vegetables	8,384,500		9,737,700	
Leaf tobacco	6,445,000	8,743,025	8,600	7,592
Cattle, hogs, and sheep	35,796,000	19,998,638	475,400	487,603
Horses and mules	4,068,300	2,981,095	4,357,500	2,156,010
Lumber, timber, logs, &c	29,635,500	18,875,619	700,900	2,340,956
Bacon and lard	6,910,600	13,022,796	478,400	1,150,123
Beef and pork	1,588,400	69,059,863	408,900	66,646,123
Beer	14,643,200		376,200	
Coal oil and petroleum	2,078,100		2,309,700	
Cotton-seed oil	1,243,900		5,676,700	
Flour and meal	34,886,600		4,422,700	
Liquor	4,825,500		767,500	
Salt	89,300		305,600	
Naval stores	4,653,100		61,600	
Sugar and molasses	2,203,800		83,549,100	
Coffee	91,300		4,683,000	
Building rock, sand, &c	2,045,500	4,698,469	44,000	182,585
Coal, coke, and ore	99,801,800	3,359,967	418,700	2,403,270
Pig-iron	3,876,300	1,778,733	192,800	81,806
Agricultural implements	945,200	3,758,123	5,200	176,718
Machinery	2,381,200		195,900	
Brick	168,200	9,296,960	68,500	46,846,508
Cement	13,315,700		576,200	
Cotton ties and bagging	3,332,800		2,371,400	
Fertilizers	1,163,300		2,665,900	
Furniture	311,500		166,900	
Manufactured iron	7,765,700		1,703,500	
Nails	3,993,800		287,800	
Miscellaneous	68,459,900	50,900,170	81,089,000	3,379,242
Total	488,465,200	321,077,688	228,090,400	186,672,581

Statement of freights received at and forwarded from New Orleans via the Morgan's Louisiana and Texas Railroad and Steamship Company for years ending June 30, 1883 and 1881.

Articles.	1883.			1881.
	Through freight.	Local freight.	Total.	Total.
Cotton ..... bales	197,348	35,774	233,122	176,468
Seed cotton ..... pounds	1,064	4,066,214	4,067,278	.....
Cotton yarn ..... bales	24	.....	24	.....
Cotton-seed ..... pounds	25,925,295	13,052,149	38,977,444	16,988,499
Cotton-seed oil ..... barrels	35,725	1,245	31,970	11,682
Cotton-seed meal ..... sacks	.....	.....	.....	14,311
Sugar ..... hogsheads	2,089	44,011	46,100	48,310
Do ..... barrels	253	34,131	34,384	22,982
Molasses ..... do	566	82,477	83,043	77,778
Honey ..... do	17	48	65	.....
Wheat ..... pounds	1,601,424	.....	1,601,424	2,151,389
Corn ..... do	663,876	40,513	704,389	4,682,722
Oats ..... do	10,925,518	.....	10,925,518	17,567,440
Rice ..... barrels	70	7,685	7,755	.....
Do ..... sacks	2,459	68,984	71,443	69,904
Do ..... pounds	1,210,523	40,000	1,250,523	.....
Potatoes ..... barrels	62	661	723	.....
Do ..... sacks	2	44,669	44,671	15,919
Eggs ..... dozen	156,930	283,292	440,222	389,120
Poultry ..... coops	184	159	343	674
Pecans ..... barrels	2,548	342	2,890	2,967
Do ..... sacks	10,770	27	10,797	8,362
Horses ..... head	5,459	737	6,196	3,434
Mules ..... do	280	348	628	

ment of freights received at and forwarded from New Orleans, &c.—Continued.

Articles.		1883.			1881.
		Through freight.	Local freight.	Total.	Total.
	head..	17,586	2,293	19,879	31,126
l yearlings	do....	6,062	8,608	14,670	15,670
	do....	25,038	280	25,318	16,912
	do....	1,664	95	1,759	
as and Louisiana)	pounds..	11,231,585	165,903	11,379,438	*51,686
ifornia)	do....	2,323,440		2,323,440	
es	do....	645,683	746,092	1,391,775	†344,925
	do....	5,003,850	270,542	5,274,392	‡3,495,195
tering	do....	187,992	202	188,194	‡757
d soap stock	do....	1,100	56	1,151	575
	do....	1,328,684	324,699	1,653,383	3,385,850
	do....	32,593	2,600	35,193	80,000
	bales..		75	75	1,727
	do....	14	7,624	7,638	4,547
	pounds..	403,585	1,055,458	1,459,043	520,000
	do....	905,536	230,456	1,135,992	§553,500
ues	barrels..				6,048
	pounds..	872		872	
	bales..	426	828	1,253	
meal	barrels..	933	273	1,206	
	pounds..		10,585,750	10,585,750	
	do....	3,369,039	3,650	3,372,689	
California	do....	5,310		5,310	
ornia	do....	2,330		2,330	
	barrels..	100	73	173	
ed meats	pounds..	2,343,000		2,343,000	
alifornia	do....	3,720		3,720	
peas	barrels..	170	252	422	
is, California	do....	68,540		68,540	
	sacks..	18	4,533	4,551	
etables	pounds..	123,850	1,980	125,830	
pplies, California	do....	129,278		129,278	
ods, California	cases..	52,007		52,007	
California	pounds..	3,810		3,810	
California	do....	6,070		6,070	
alifornia	cases..	50		50	
ifornia	pounds..	50,650		50,650	
ers	sacks..		481	481	
	barrels..	2,155	2,734	4,889	
	crates..	2,609		2,609	
sorted	pounds..	1,162,442	5,465	10,167,907	
l liquors	barrels..	336	66	402	
wines	puncheons..	362		362	
	pipes..	54		54	
	barrels..	5,902		5,902	
	cases..	876		876	
cigars	do....	16		16	
co, Havana	bales..	866		866	
t, California	pounds..	5,670		5,670	
rine, California	tierces..	50		50	
	number..	163		163	
	pounds..	11,173		11,173	
oats' hair	do....	2,400		2,400	
	do....	1,874,792	74,856	1,949,648	
fornia	do....	67,370		67,370	
s, California	do....	14,970		14,970	
fornia	do....	174,940		174,940	
	do....	45,827	11,100	56,927	
California	do....	55,670		55,670	
alifornia	do....	3,270		3,270	
ifornia	do....	4,710		4,710	
a, California	do....	23,850		23,850	
	barrels..	6		6	
	bales..	15		15	
roots, California	pounds..	16,558		16,558	
	bales..	2,129		2,129	
	do....	13		13	
ut	pounds..	2,145,793	50,000	2,195,793	
ogony	do....	18,000		18,000	
	bales..	2		2	
la	do....	8		8	

ides, 7,665 packages; dry hides, 77,671 packages, reduced to pounds at 45 pounds per pack-

hundred and seven bales, estimated at 500 pounds per bale.

Statement of freights received at and forwarded from New Orleans, &c.—Continued.

Articles.	1883.			1881.
	Through freight.	Local freight.	Total.	Total.
Shells, abilone and pearl.....pounds..	119, 550	.....	119, 550	.....
Sponges, California.....do....	430	.....	430	.....
Gum, Mexican.....do....	2, 024	.....	2, 024	.....
Aniline, California.....do....	1, 070	.....	1, 070	.....
Japanese goods, California.....do....	1, 550	.....	1, 550	.....
Silks, California.....do....	13, 530	.....	13, 530	.....
Borax, California.....do....	576, 111	.....	576, 111	.....
Copper bullion, Arizona.....do....	3, 701, 293	.....	3, 701, 293	.....
Lead, California.....do....	4, 533, 093	.....	4, 533, 093	.....
Lead.....do....	.....	480	.....	.....
Silver ore, Arizona.....do....	90, 610	.....	90, 610	.....
Quicksilver, California.....do....	910	.....	910	.....
Lumber.....feet..	6, 892	2, 297, 550	2, 303, 942	.....
Machinery.....pounds..	142, 761	529, 294	772, 055	.....
Bullion and specie.....	$514, 184 28	.....	$514, 184 28	.....
Copper cement, California.....pounds..	20, 220	.....	20, 220	.....
Miscellaneous.....	.....	.....	.....	.....
Merchandise.....pounds..	2, 756, 891	1, 632, 777	4, 389, 668	

* Tons.

As yet no statement of the business of the New Orleans and Texas Pacific Rail has been obtainable, except of the amount of cotton handled. It commenced o tions in 1882.

The figures given show for themselves, and therefore need no comment.

APPENDIX No. 77.

STATEMENT IN REGARD TO THE DEPTH OF WATER AT THE MOUTH OF THE MISSISSIPPI RIVER, FURNISHED BY HENRY G. HESTER, ESQ., SECRETARY OF THE NEW ORLEANS COTTON EXCHANGE.

NEW ORLEANS, *June* 19, 1884.

DEAR SIR: In reply to your inquiry we have pleasure in stating that during the past year we have loaded fifty-five steamers with 179,000 bales of cotton and 49,500 tons of heavy cargo, principally grain and oil-cake, and they have none of them had any trouble in getting out to sea. Our steamers, however, are not by any means the deepest-draught vessels that come here, and we have loaded none this year deeper than 23 feet. No doubt there is plenty of water at the mouth of the river. At the jetties we believe there is certainly not less than 30 feet, but there are two bends in the passes that are, we are informed, beginning to fill up. We refer to the Grand Bayou and Cypress Bend, where the depth of water in the channel that a steamer must take is reported as only 24 feet. The bottom is soft mud, however, and a sharply-built steamer will scrape through probably 18 inches of mud, although a flat-bottomed vessel will not do so.

If there is any other information you want please command us.

Yours, very truly,

LUCAS E. MOORE & CO.,
Agents Harrison Line.

HENRY G. HESTER, Esq.,
Secretary New Orleans Cotton Exchange, City.

OFFICE OF UNITED STATES ENGINEERS, 37 UNION STREET,
New Orleans, La., June 20, 1884.

SIR: In response to application made for information relative to the depth of water through the South Pass I take pleasure in furnishing you the information sought.

From surveys made in February and March last it was determined that the least depth through the jetties was 33.8 feet, the least width of the 26-foot channel being 290 feet, and the least width of the 30-foot channel being 180 feet, while the shoalest locality in the pass at the end of March was near Grand Bayou, where the least available depth was 28½ feet; the 26-foot channel being 400 feet wide, with a 30-foot channel 70 feet wide, but not straight enough to be considered navigable. This records the deepest channel which had ever existed from the main Mississippi River to the Gulf of Mexico.

By surveys made in April it was learned that the least depth through the jetties was 31.7 feet, the least width of the 26-foot channel was 270 feet, and of the 30-foot channel, 170 feet, and the shoalest locality in the pass was near Grand Bayou, at which there was a least width of 27.6 feet, the least width of the 26-foot channel being 220 feet.

Surveys made in May showed that through the jetties the least depth was 33 feet; the least width of the 26-foot channel was 260 feet, and of the 30-foot channel 190 feet; and beyond the ends of the jetties the least depth in the channel was 31.8 feet, the least width of the 30-foot channel being 70 feet. The channel near Bayou Grande had improved during the month, its least depth being 29 feet, and the width of the 26-foot channel was 250 feet.

Very respectfully, yours,

THOMAS TURTLE,
Captain of Engineers, U. S. Army, in Charge of the Examinations at the South Pass of the Mississippi River.

HENRY G. HESTER, Esq.,
Secretary New Orleans Cotton Exchange.

APPENDIX No. 78.

STATEMENT OF FREIGHT FROM STATIONS WEST OF EL PASO, TEX., CONSIGNED TO NEW YORK VIA TEXAS AND PACIFIC RAILROAD FROM FEBRUARY, 1882, TO JANUARY, 1883, AND VIA SOUTHERN PACIFIC RAILROAD FROM FEBRUARY, 1883, TO JUNE 1, 1884.

Articles.	Via Texas Pacific Railroad and Morgan's Louisiana and Texas Railroad.	Via Southern Pacific Railroad.	Total.
Dry hides.....pounds..	.....	746, 855	746, 855
Skins:			
Sheep, goats, &c.....do....	.....	34, 680	34, 680
Walrus.....do....	.....	1, 600	1, 600
Seal, salted.....do....	.....	287, 495	287, 495
Bird.....do....	.....	1, 610	1, 610
Furs.....do....	.....	100, 015	100, 015
Wool.....do....	.....	16, 566, 211	16, 566, 211
Mohair.....do....	.....	51, 725	51, 725
Goat hair.....do....	.....	5, 780	5, 780
Seal hair.....do....	.....	5, 093	5, 093
Plumes, pampas.....do....	.....	16, 970	16, 970
Leather.....do....	.....	827, 758	827, 758
Leather, walrus.....do....	.....	1, 820	1, 820
Ivory, walrus.....do....	.....	7, 310	7, 310
Whalebone.....do....	.....	17, 850	17, 850
Tallow.....barrels..	.....	22	22
Glue.....pounds..	.....	389, 140	389, 140
Salmon, canned.....cases..	.....	20, 850	20, 850
Caviar.....pounds..	.....	4, 120	4, 120
Beans.....do....	.....	1, 110, 250	1, 110, 250
Rice.....sacks..	.....	4, 044	4, 044
Chocolate.....pounds..	1, 300	4, 330	5, 630
Coffee.....do....	.....	306, 150	306, 150
Tea.....do....	.....	83, 069	83, 069
Flour.....barrels..	.....	10	10
Oleomargerine.....pounds..	.....	51, 620	51, 620
Fruits and vegetables, canned.....cases..	.....	55, 440	55, 440
Fruit, dried.....pounds..	.....	36, 620	36, 620
Chinese supplies.....do....	.....	310, 968	310, 968
Mustard.....do....	.....	4, 990	4, 990
Olives.....cases..	.....	4	4
Olive oil.....do....	.....	100	100
Nutmegs.....pounds..	.....	6, 070	6, 070
Vanilla beans.....do....	.....	410	410
Honey.....do....	.....	3, 630	3, 630
Fig sirup.....cases..	.....	7	7
Raisins.....pounds..	.....	27, 650	27, 650
Almonds.....do....	.....	4, 700	4, 700
Walnuts.....do....	.....	19, 360	19, 360
Hops.....do....	.....	219, 020	219, 020
Wine.....puncheons..	.....	906	906
Do.....pipes..	.....	462	462
Do.....casks and barrels..	48	4, 110	4, 158
Do.....cases..	.....	2, 066	2, 066
Barley-maltine.....pounds..	.....	1, 725	1, 725
Brandy.....puncheons..	.....	3	3
Do.....barrels..	.....	1, 309	1, 309
Do.....cases..	.....	193	193
Vinegar.....barrels..	.....	11	11
Cigars.....cases..	.....	22	22
Leaf tobacco.....pounds..	.....	13, 470	13, 470
Asphaltum.....do....	.....	22, 470	22, 470
Alfalfa seed.....do....	.....	21, 310	21, 310
Camphor.....do....	.....	1, 360	1, 360
Ginger.....do....	.....	240	240
Herbs, roots, and plants.....do....	.....	35, 645	35, 645

Statement of freight from stations west of El Paso, Tex., &c.—Continued,

Articles.		Via Texas Pacific Railroad and Morgan's Louisiana and Texas Railroad.	Via Southern Pacific Railroad.	Total.
Logs primavera	pounds		186,490	186,490
Opium	do		360	360
Shells:				
Abilone	do		70,900	70,900
Pearl	do		104,020	104,020
Sponges	do		2,790	2,790
Rubber	bales		2	2
Copper bullion	pounds		10,025,152	10,025,152
Lead bullion	do	16,655,181	1,620,970	18,276,151
Ores, argentiferous	do		881,260	881,260
Quicksilver	do		910	910
Borax	do		1,383,031	1,383,031
Cloth, California	do		5,700	5,700
Flannel, California	do		8,220	8,220
Blankets, California	do		89,191	89,191
Hosiery, California	do		1,384	1,384
Japanese goods	do		9,513	9,513
Silks	do		39,780	39,780
Aniline	do		1,070	1,070
Human hair	do		460	460
Machinery	do		44,200	44,200
Miscellaneous merchandise and household goods	do		286,359	286,359
Agate ware	do		930	930
Copper cement	do		83,540	83,540
Red oil	barrels		52	52
Junk	pounds		630	63

NOTE.—Freight via Texas and Pacific came to New Orleans over Morgan's Louisiana and Texas Railroad, and was delivered and forwarded by that company, the Texas and Pacific line to New Orleans not having been completed.

E. M. UNDERHILL,
Auditor.

NEW ORLEANS, LA., *June* 28, 1884.

APPENDIX No. 79.

STATEMENT OF FREIGHT CONSIGNED TO NEW ORLEANS, LA., FROM STATIONS WEST OF EL PASO, TEX., VIA TEXAS PACIFIC RAILROAD, FROM FEBRUARY, 1882, TO JANUARY 31, 1883, AND VIA SOUTHERN PACIFIC RAILROAD FROM FEBRUARY, 1883, TO JUNE 1, 1884.

Articles.		Via Texas Pacific Railroad.*	Via Southern Pacific Railroad.	Totals.
Wheat	pounds	6,727,314	5,139,645	11,866,959
Flour	sacks	3,280		3,280
Canned salmon	cases	2,811	10,055	12,866
Canned fruits and vegetables	do	1,227	15,579	16,806
Beans	pounds	42,500	24,120	67,620
Chocolate	do	2,300	30,530	32,830
Tea	do		31,843	31,843
Honey	do	2,000	53,010	55,010
Green and dried fruits	do	3,250	138,250	141,500
Almonds	do		20,250	20,250
Raisins	do		27,400	27,400
Hops	do		569,906	569,906
Wines and brandies	puncheons		47	47
Do	casks and barrels	5,839	16,858	22,697
Do	cases		151	151
Vinegar	barrels		10	10
Cigars	cases		43	43
Leather	pounds	200	13,300	14,150
Peltries	do		3,790	3,790
Iron	do		51,600	51,600
Copper	do		114,940	114,940
Ores	do	20,000	150	20,150
Borax	do		192,200	192,200
Pampas plumes	do		500	500
Shells, abilone, and pearl	do		44,900	44,900
Machinery	do		18,310	18,310
Miscellaneous merchandise and household goods	do	116,609	93,471	210,080

* This freight came over the Texas and Pacific, via Cisco and Denison and Cheneyville, prior to completion of the Southern Pacific, and was delivered by Morgan's, Louisiana and Texas Railroad.

E. M. UNDERHILL,
Auditor.

NEW ORLEANS, LA., *June 26*, 1884.

APPENDIX No. 80.

MENT SHOWING WEST-BOUND TONNAGE, CALIFORNIA FREIGHT, MORGAN STEAMERS FROM NEW YORK, RELOADED AT ALGIERS, M MARCH, 1883, TO JUNE 1, 1884.

Date.	Number of car loads.	Estimated number of tons.
883	70	700
3	135	1,350
	296	2,960
3	462	4,620
3	353	3,530
1883	260	2,600
r, 1883	186	1,860
1883	223	2,230
r, 1883	303	3,030
r, 1883	250	2,500
1884	356	3,560
, 1884	312	3,120
884	235	2,350
4	106	1,060
	115	1,150
al	3,662	36,620

APPENDIX No. 81.

STATEMENT PRESENTED BY MR. C. DRINKWATER, SECRETARY OF THE CANADIAN PACIFIC RAILWAY COMPANY, IN REGARD TO THE SEVERAL LINES OWNED AND CONTROLLED BY THAT COMPANY AND THE PROGRESS OF CONSTRUCTION ON THE UNCOMPLETED PORTION OF THE SYSTEM.

CANADIAN PACIFIC RAILWAY COMPANY,
OFFICE OF THE SECRETARY,
Montreal, January 19, 1885

J. NIMMO, Jr., Esq.,
Treasury Department, Washington:

MY DEAR SIR: I now have the pleasure to inclose the memorandum relating to the Canadian Pacific Railway which you were good enough to send me for correction. As you will see I have added considerable to it, mainly in the way of statistical information, which I think you will find of service in such a report as you propose to make.

The map has also been gone over by our engineer, and some corrections made upon it. You will observe also that we have shown this company's lines in Ontario as well as the main line. You will notice a projected line from Gravenhurst to Callander, the object of which is to bring Ontario into direct connection with the Canadian Pacific Railway. These Ontario lines of the company may therefore be considered as forming a part of the Pacific system. This line from Gravenhurst to Callander has been heavily subsidized by the Dominion Government, $12,000 per mile being allowed. It is now under construction and is expected to be completed this year. It is an extension of the Northern Railway of Canada, although having a separate corporate existence known as the Northern and Pacific Junction Railway.

You will also observe another projected line which we have marked from Saint Paul across to Sault Ste. Marie. This line will undoubtedly be built, and as you will see from the direct route it will take to the East it will have an important bearing upon the transcontinental trade. The Algoma Branch of the Canadian Pacific Railway is completed, and its extension to Sault Ste. Marie could very soon be accomplished.

I shall be very much obliged if you will send me a copy of your report when printed, and shall always be glad to give you any information of the kind in my power.

In your letter you referred to a statement that Sir John A. Macdonald had recently secured a loan for this company of $6,000,000 or $8,000,000. There is no truth whatever in the report.

I sent you some time ago a report of the proceedings in Parliament in relation to the proposed Hudson's Bay Line. During the past season an exploring expedition was dispatched to Hudson's Bay to report upon its practicability as a steamship route. The expedition has returned, but met with very indifferent success. All the documents in relation to it will shortly be published and laid before parliament, which meets on the 29th instant, and I will take care that you are furnished with copies.

The dangers and difficulties connected with the navigation of Hudson's Bay and Straits have recently been exemplified in a rather unfortunate manner. The Hudson's Bay ships make one voyage from England to Hudson's Bay and back each year. This year the vessel left early in October on the return voyage, but was unable to get through the straits and had to put back to Carlton Island, where she will winter.

Yours, very truly,

C. DRINKWATER,
Secretary.

P. S.—I have marked on the map the different provinces into which the northwest is divided.

THE CANADIAN PACIFIC RAILWAY.

The main line of the Canadian Pacific Railway extends from Montreal in the east, through Ottawa and the Ottawa Valley and along the northern shore of Lake Su-

perior to Port Arthur, thence to Winnipeg in the Province of Manitoba, and westerly to a port in British Columbia, on Burrard Inlet, an arm of the Strait of Georgia.

This new transcontinental rail line will, by virtue of the reciprocity of transportation facilities which exist with respect to traffic over the railroads of the United States and of Canada, become essentially a part of the railroad system of the United States. The proprietors and managers of the Canadian Pacific Railway can also acquire the ownership and control of railroads in this country, if they shall be inclined to do so, and possess the energy, tact, and financial ability requisite to the accomplishment of that object, just as such control of railroads in the United States has already been acquired by the management of the Grand Trunk Railway. By this means, or by means of traffic arrangements entered into with railroads of this country, the Canadian Pacific Railway, like the Grand Trunk Railway, will be enabled to compete sharply with the railroads of the United States in the conduct of our internal commerce.

The company was incorporated in February, 1881, in terms of a contract between the Government of Canada and the company, under which the Government undertook to construct and transfer to the company, free of cost, those portions of the main line between Thunder Bay, on Lake Superior, and Winnipeg, 429 miles (opened for traffic in June, 1883), and between Savona's Ferry, at the foot of Lake Kamloops, and Port Moody, in British Columbia, on the Pacific coast, 214 miles (now completed), as well as the branch line from Emerson (the United States boundary) to Winnipeg, 65 miles, completed and in operation for some years; whilst the company undertook to complete and equip before the 1st May, 1891, the line between Callander Station, at the east end of Lake Nipissing, to a point of junction with the line from Thunder Bay, at Port Arthur, to Winnipeg (650 miles), and between Winnipeg and Savona's Ferry (1,249 miles). The whole line to be the property of the company, and to be maintained and operated by them.

On the 9th June, 1881, the Canadian Pacific Railway Company acquired all the rights of the Canada Central Railway from Brockville, on the river Saint Lawrence, to Ottawa and Callander, near Lake Nipissing, and incorporated its works with those of the Canadian Pacific system. In March, 1882, the western section of the Quebec, Montreal, Ottawa and Occidental Railway, from Montreal to Ottawa (120 miles and branches), was also purchased, by means of which the main line has been extended from Callander to Montreal and Brockville.

The company has leased in perpetuity the Ontario and Quebec system of railways, comprising the Ontario and Quebec, the Credit Valley, the Toronto, Grey and Bruce, and the Atlantic and Northwest Railways, recently consolidated under the name of the Ontario and Quebec Railway. This line, now the Ontario Division, is at present in operation from Smith's Falls, and, in connection with the eastern division of the Canadian Pacific Railway, from Montreal to Toronto and Saint Thomas, where it connects with the Michigan Central, thus forming another competing road in addition to the Grand Trunk for traffic between Chicago and the New England States. At Owen Sound, on Georgian Bay, a connection has been formed with the western section of the line at Port Arthur, by means of three Clyde-built steel steamships belonging to the company. The opening of this route gave the company, during the past season, a direct communication by means of its railway and steamers from Montreal to the summit of the Rocky Mountains. The company has also leased the Saint Lawrence and Ottawa Railway, running from Ottawa to Prescott, on the Saint Lawrence River, 54 miles. At the latter place connection is made by means of a ferry with the lines of railway running south and west from Ogdensburg.

In 1883 the branch to Algoma on Lake Huron (96 miles) was completed.

The company has built and acquired branch lines in Manitoba covering a mileage of 294 miles.

By the 15th April, 1885, the eastern and western divisions of the railway will be connected north of Lake Superior, thus affording a continuous line from Montreal to the summit of the Selkirk Mountains, a distance of about 2,500 miles. The gap which will then remain will be constructed from both ends of the track, and it is expected that the whole line will be completed four months later.

The total distance from Montreal to the Pacific Ocean by the Canadian Pacific Railway will be about 2,890 miles, and the following indicates the position of the work at the close of 1884:

	Miles.
Montreal to Biscotasing, north of Lake Superior, completed	535
Biscotasing to Gravel Bay, north of Lake Superior, under construction, but will be completed by 15th April, 1885	363
Gravel Bay to Port Arthur, Lake Superior, completed	100
Port Arthur to Winnepeg, completed	429
Winnipeg to the Beaver River, Selkirk Mountains, completed	1,033

	Miles.
Columbia River to Savona's Ferry, British Columbia, under construction, but will be completed before the close of the season of 1885	216
Savona's Ferry to Port Moody, completed	214
Total main line	2,890
Leased lines	695
Branch lines	426
Total mileage	4,011

The Government of the Dominion of Canada appears to have been even more liberal in promoting the construction of the Canadian Pacific Railway than was the Government of the United States in promoting the construction of the Union Pacific and the Central Pacific Railroads of this country.

GOVERNMENT SUBSIDY.

The Government granted to the company a subsidy in money of $25,000,000, and in land 25,000,000 acres, all to be fit for settlement, for which subsidies the construction of the railway is to be completed and the line equipped, maintained, and operated. They have also undertaken to make over to the company free of cost, as above described, about 710 miles of completed road, costing about $35,000,000. The grant of land is made in alternate sections of 640 acres each, extending back 24 miles deep on each side of the railway from Winnipeg to the Rocky Mountains, so far as such lands are vested in the Government. The railway and its rolling stock and other property, as well as the capital stock of the company, are forever free from taxation by the Dominion or any province established after the date of the charter, or any municipality therein, and the lands of the company in the northwest territories, until they are either sold or occupied, are also free from taxation for twenty years after the grant thereof from the Crown.

The company is also authorized to build and has built *pari passu* with the railway a line of telegraph along the entire railway, which under its charter it is empowered to use for commercial as well as railway purposes. The privilege is also extended to the company of importing free of duty steel rails and other material used in the construction of its road.

By an act passed in 1884 the Canadian Government agreed to lend the company the sum of $22,500,000, namely: $7,500,000 to pay off the floating debt, and $15,000,000 payable as construction progresses, in the same manner as the money subsidy. By this act also payment of $2,853,912 agreed to be deposited by the company to secure payment of the guaranteed dividend of 3 per cent. hereafter referred to is deferred until November, 1888, on which date a further payment on this account of $4,527,000 will become due. These sums, together with the loan above referred to, making in all $29,880,912, are secured by a first lien and charge over the entire property redeemable on or before the 6th May, 1891. Interest at the rate of 5 per cent. per annum is payable half-yearly.

By the same act $35,000,000 common stock deposited with the Government as security may be sold, but with the consent of the Government only, and the proceeds applied to extension of the railway or for other purposes connected therewith.

COMMON STOCK.

The common stock is $100,000,000, $65,000,000 of which has been sold, the balance, $35,000,000, having been deposited with the Canadian Government as above stated. The original share capital was $5,000,000, which was increased to $25,000,000 at the first annual meeting, held in Montreal on the 10th May, 1882. The capital was further increased by $75,000,000 at a special general meeting held on the 28th November, 1882. Interest was paid by the company at the rate of 6 per cent. per annum in August, 1881, and half-yearly in 1882 and 1883, at the rate of 5 per cent. per annum; in February and August, 1884, at the rate of 5 per cent. per annum, 3 per cent. of which was paid by the Canadian Government under their guarantee, and 2 per cent. by the company.

GUARANTEED DIVIDEND.

On the 10th November, 1883, a contract was executed between the company, the Canadian Government, and the Bank of Montreal, under which the Government, in consideration of cash and securities deposited with it, bound itself to pay into the bank, as trustee for the shareholders, on the 17th February and 17th August in each year, until 17th August, 1893, inclusive, a sum of money sufficient to pay a sem

annual dividend at the rate of 3 per cent. per annum on the entire outstanding capital stock of the company ($65,000,000). Out of this sum by the same contract the Bank of Montreal covenants with the railway company to pay the stockholders half-yearly dividends at the above rate. This arrangement was confirmed by the loan act passed in 1884. Any dividends declared by the company will be in addition to the guaranteed dividend of 3 per cent. per annum.

LAND-GRANT BONDS.

The company has executed a mortgage and issued bonds for $25,000,000 on their entire land grant of 25,000,000 acres. Of these bonds the Government accepted in 1881 $5,000,000 as security for the maintenance and continuous working of the railway for ten years after completion, and on such bonds the Government do not require payment of interest so long as no default occurs, and a further $8,996,000 have been deposited with the Government as security without interest under the loan act, 1884. These bonds will remain in this position, and are not for sale.

The company has sold to September 30, 1884, 3,608,793 acres, the net proceeds of which redeemed $7,152,500 of bonds. A further amount of $135,500 bonds had been redeemed to December 1, leaving outstanding at that date $3,715,000. Against this there were deferred payments at September 30 of $2,357,000 on land sales contracts, the greater portion of which will be paid in bonds, as for this purpose they are accepted by the company at 10 per cent. premium. The Government lien under the loan act does not take precedence of outstanding bonds. The bonds still outstanding bear interest at the rate of 5 per cent. per annum, payable at Montreal or New York on April 1 and October 1, in dollars, or in London, at Messrs. Morton, Rose & Co., at the rate of 4*s.* 1½*d.* per dollar. The principal is redeemable at Montreal on the 1st of October, 1931, unless redeemed out of the proceeds of land sales, or by purchase, or by drawings at 10 per cent. premium.

Summary land-grant bonds.

Total issue		$25,000,000
Deposited with Government as security without interest	$13,996,000	
Redeemed by land sales and canceled	7,289,000	
		21,285,000
		3,715,000

Against which there are deferred payments on land sales of $2,357,000, as above described, the greater portion of which will doubtless be paid in bonds.

It would appear from these extraordinary concessions and subventions that the people of Canada regard the construction of the Canadian Pacific Railway as a work of great commercial and political importance.

In view of the facts just stated, and the additional fact that the Canadian Government has already appropriated the sum of $45,115,649 in the construction of canals connecting the upper lakes with tide-water on the Saint Lawrence River, it appears safe to say that the enterprise of the Dominion in the establishment of facilities for internal transportation is, perhaps, unequaled by that of any other country in modern times.

It is expected that the proceeds of the capital stock of the Canadian Pacific Railway, with the subventions granted by the Government, will be sufficient to build and equip the entire line.

The construction of the Canadian Pacific Railway mainly through an uninhabited wilderness, marks it as one of the heroic railroad enterprises of the present age.

It is stated by the president of the road, in an official memorandum, that the entire line is being constructed with a view to efficient and economical operation, steel rails of the best quality, weighing 56 pounds per yard and upward, being used, 70-pound rails being used on the mountain section, and that all the important structures of the road are of the most substantial character.

Abundant supplies of coal have already been discovered along the line between Medicine Hat (river Saskatchewan) and the Rocky Mountain division of the road, a very important consideration in so far as relates to the cost of transportation as well as to the interests of the settler.

THE RELATION OF THE CANADIAN PACIFIC RAILWAY TO THE COMMERCIAL AND TRANSPORTATION INTERESTS OF THE UNITED STATES.

By means of its connections with navigation on Lake Huron and on Lake Superior *and its connections with* railroads in the New England States, in the State of New *York, and in Minnesota,* close traffic relations now exist between the Canadian

Pacific and railroads in the United States as well as with American navigation interests on the lakes.

A similar intermingling of transportation interests may be expected to spring up on the Pacific coast.

It is easy also to perceive the possible future relationships which may and probably will spring up between the Canadian Pacific Railway and the transportation interests of the United States under the privileges of the "transit trade," and of the ability of railroad companies of either country to enter into combination with railroads of the other, and also to acquire the control of lines within the territory of the other.

As the Grand Trunk Railway has become one of the competing railroads for traffic between Chicago and the New England States, upon equal terms with the great east and west trunk lines of the United States, so may the Canadian Pacific Railway be expected to become a competitor of the Pacific railroads of the United States for a part of the transcontinental traffic of this country. The Pacific railroads of this country will also become competitors of the Canadian Pacific Railway for the transcontinental traffic of the Dominion of Canada.

But this competition will undoubtedly be mutually beneficial to the commercial and industrial interests of the two countries. Besides, it will introduce elements of competition both of transportation and of trade, the effect of which will be to regulate rail rates. And as the Grand Trunk Railway has joined with the great east and west trunk lines of the United States in an association, the object of which is to prevent the cutting of rates and wars of rates, so may we expect that the Canadian Pacific Railway will, upon its completion, unite with the transcontinental railroads of the United States in such an association as that which was entered into between those railroads at San Francisco in September, 1883, for the pooling or division of traffic.

It is said that the population of the province of Manitoba, and of the northwest territories of the Dominion of Canada increased from about 12,000 in 1871 to about 250,000 in 1880; that the population of the city of Winnipeg, the capital of Manitoba, increased from 350 in 1871 to 20,000 in 1881, and that its population is at the present time about 30,000.

Manitoba and Assiniboia have proved to be highly productive wheat provinces. It is stated upon official authority that the wheat product of these provinces averages about 25 bushels to the acre. After providing for home consumption and seed, a surplus of 6,000,000 bushels was produced in 1884.

The Canadian Pacific Railway will undoubtedly be the instrument of a rapid development of the resources of a vast and productive territory extending along our northern border line from the Great Lakes to the Pacific coast. This, in connection with the well established fact that the line of policy pursued by the management of every railroad must from the force of circumstances be controlled mainly by the demands of commerce, affords abundant reason to believe that the various sections and branches of that railroad will in many important ways tend to promote the commercial, industrial, and transportation interests of the United States.

Minneapolis, the principal city in the United States for the manufacture of flour, will probably furnish a market for a large proportion of the grain grown in the provinces of Manitoba and Assiniboia, and as the population of those provinces increases there will undoubtedly spring up an important reciprocal trade between them and the commercial cities of our Western and Northwestern States.

APPENDIX No. 82.

STATEMENT IN REGARD TO THE COST OF THE CANALS OF THE STATE OF NEW YORK.

TREASURY DEPARTMENT, BUREAU OF STATISTICS,
Washington, D. C., February 4, 1884.

Gen. F. O. STANARD,
Willard's Hotel, Washington, D. C.

DEAR SIR: I received a letter this morning from the comptroller of the New York State canals, dated February 2, in which he says that "the amount which the canals have actually cost the State in excess of their earnings is represented by the amount of taxes levied and paid into the State treasury for canal purposes. These taxes aggregate at the close of the fiscal year ended September 30, 1883, $39,844,966.21. This, however, does not represent the actual amount paid for construction, a large proportion of which has been paid out of net earnings. As you well know, the New York State canals were for many years an important source of revenue to the State.

The following is, I think, the information which you desire to obtain as to the actual cost of constructing the New York State canals:

Cost of construction and improvements.

Erie Canal	$49,591,852 68
All canals of the State	78,685,580 93

I inclose to you herewith a table copied from the State auditor's report for the year ended September 30, 1882. The comptroller states that the construction account has increased only about $21,000 since that date.

As a general expression you will be perfectly safe in saying that the cost of constructing the canals of the State of New York has been nearly $79,000,000.

Very respectfully,

JOSEPH NIMMO, JR.,
Chief of Bureau.

STATE OF NEW YORK, COMPTROLLER'S OFFICE,
BUREAU OF CANAL AFFAIRS,
Albany, February 2, 1884.

DEAR SIR: Yours of the 30th ultimo received. I have heretofore sent you as complete a file of tonnage reports as we could obtain. The reports from 1863 to 1869 have been exhausted.

I send you by mail to-day financial report for the fiscal year ended September 30, 1882. On page 12 thereof you will find statement of cost of construction for each canal, together with the operating expenses to close of the year. The construction account has not since been increased to any material extent, the additional cost to the close of the fiscal year ended September 30, 1883, being $21,034.55. All the interest earned for which the canals are entitled to credit is included in revenue, but there is no charge in the statement for interest paid on loans contracted on construction account. All the net earnings have mainly been applied in the redemption of loans, and the payment of interest thereon, and where not thus applied they have been expended in improving and enlarging the canal.

The amount which the canals have actually cost the State in excess of their earnings is represented by the amount of taxes levied and paid into the State treasury for canal purposes. These taxes aggregated at the close of the fiscal year ended September 30, 1883, $39,844,966.21.

The canal debt outstanding in excess of the sinking fund at the close of the last fiscal year, amounted to $5,852,606,94.

The operating expenses and maintenance, the canal debt and interest thereon, are payable from the proceeds of taxes.

Yours, respectfully,

EDMUND SAVAGE,
Chief Clerk.

JOSEPH NIMMO, Jr., Esq.,
Chief of the Bureau of Statistics, Washington, D. C.

APPENDIX No. 83.

STATEMENT FURNISHED BY MR. BYRON ANDREWS IN REGARD TO EASTERN OREGON AND EASTERN WASHINGTON TERRITORY.

There are some characteristics of the wheat industry of Washington Territory and Eastern Oregon, which are peculiar and worthy of especial notice. The chief variety of wheat raised is a kind of club—a hard wheat—the seed of which originally came from Chili. It is sown according to the judgment of the farmer, or the peculiar circumstances of the case, either in the spring or in the fall. That sown in the fall usually yields about double the crop of that sown in the spring, for the reason that it gets the full benefit of the wet season, while spring wheat in many cases never receives a drop of moisture from the time it is sown until it is reaped. The average yield of winter wheat for the harvest of 1883, near Walla Walla, was about 50 bushels to the acre. The spring-sown wheat, this season (1884), is thrashing at from 20 to 25 bushels to the acre. The spring crop never had the benefit of a drop of rain during its growth.

Another peculiarity of this country is the sterile appearance of the land on which these crops are grown. The soil is strikingly alkaline and, when dried, is a fine, impalpable dust. It runs to a great depth without apparent change in its composition. Experiments have been made with it, and wheat has been grown equally as well upon earth taken from 25 to 40 feet below the surface as when planted in the ordinary way upon the surface. The crop for 1883 was about 20 per cent. less per acre than it was for the last six or seven years, owing to the fact of an excessive drought, only one-sixteenth of an inch of rain having fallen in the Walla Walla Valley since the 1st of May. Even this year there are many fields in the vicinity which are reported as having thrashed over 60 bushels of fall wheat to the acre. About four-fifths of the wheat harvested this season was sown last fall, and farmers are universal in the statement that the fall planting is decidedly the most favorable. I made a personal investigation of several fields with a view to ascertaining the cause of the apparently excessive product, and found that it arose from the large number of stocks to the stool.

Two of the largest bunches noticed were pulled and counted, and in one bunch there were forty-four stocks bearing heads, and in the other fifty-six, all of which had come from a single grain of seed.

Another peculiarity of this wheat is that it stands from four to six weeks in the field after being ripe, without danger of loss from the stock breaking down or the grain shelling out. The straw is very long, growing from 3 to 5 feet in the case of wheat, and, in exceptional cases, to 6½ feet in the case of oats. The heads of the oats we measured in a number of cases and they were found to be from 6 to 10 inches in length, and, we were informed, yielded from 60 to 75 bushels per acre.

This land also produces a luxuriant growth of corn, one field being shown us which was bearing a fine crop, not yet ripe, where this grain had been planted successively for twelve years without irrigation. The major part of the land is not irrigated, being high, barren-looking foot-hills; but the low lands in the valleys are irrigated for the purpose of raising vegetables, melons, and the smaller fruits, and occasionally wheat, when an enormous return is harvested.

The best estimates of arable land in this section of Eastern Washington and Oregon place the extent at about 9,000 square miles.

The surplus this year (1884) for export from this region is estimated at 5,000,000 bushels of wheat from the country south of the Snake River, and 1,000,000 bushels from the north of the Snake River. Previous to the present season the only market to which this crop has been sent has been Liverpool, where it has been shipped in bags, which contain about two bushels, at the time it is thrashed, there being no elevators in the country. The wheat is thrashed in the fields after having been headed merely and the straw left standing. The sacks are piled in pyramidal heaps, where they are left for weeks without danger of rain, which never begins to fall before the 15th to 20th of October. The harvesting lasts from the 1st of July to about the 1st of October, the grain, as before stated, suffering no damage from being uncut.

The grain is selling in the field, sacked, this year at 62½ cents per bushel, and at the depot at Walla Walla it was being put in car, August 24, at 65 cents per bushel.

In this section of Eastern Oregon and Washington Territory, fruit equal to that *raised in California*, with the exception of lemons, is grown in great abundance, con-

; of apples, peaches, pears, and grapes. With reference to the export of the rop nothing from practical experience can be said, because heretofore it has een raised for local consumption, wheat being relied upon for the market crop other grains, as well as fruits, being raised for feed of animals and domestic use. tofore no elevators have been erected in this section of the country from the at the export being made by sea the farmers of necessity put the grain in sacks ıvenience of handling on shipboard.

great timber-producing country of Washington Territory and Oregon is on the de of the Coast Range and along Puget Sound. The timber is chiefly fir, although s considerable tamarack, cedar, spruce, and a little pine. The fir is manufact- ıto rough boards and timbers, and is chiefly sent to Liverpool and Australia. The re made into laths which go chiefly to Chili. The spruce is made into staves ıall boards for manufacturing boxes which are distributed all over this coun- d some to Australia and South American ports. Pickets are also made of fir, ıey are shipped to Liverpool to some extent, but largely to Australia. The ıck is manufactured into trestle-work, ties, and timbers. The cedar, which is st valuable, compared with the quantity, is made into fine lumber for finish- d cabinet work. That goes to Liverpool and San Francisco, where it is dis- d.

APPENDIX No. 84.

TABLES PREPARED BY THE CHIEF SIGNAL OFFICER OF THE UNITED STATES ARMY SHOWING THE RAIN-FALL AT DIFFERENT POINTS THROUGHOUT THE PART OF THE UNITED STATES LYING WEST OF THE ROCKY MOUNTAINS.

SIGNAL OFFICE, WAR DEPARTMENT,
Washington City, February 26, 1885.

SIR: Referring to your letters of the 14th and 19th instant requesting certain rain-fall data for California, Oregon, and Washington Territory, I have the honor to transmit herewith an extract from the records of this office.

I am, very respectfully, your obedient servant,

W. B. HAZEN,
Brig. and Bvt. Maj. Gen., Chief Signal Officer, U. S. A.

Mr. JOSEPH NIMMO, Jr.,
Chief Bureau of Statistics, Treasury Department, Washington, D. C.

Statement showing the average monthly and annual precipitation, in inches and hundredths, at the below named stations of the Signal Service, United States Army.

[Computed from the commencement of observations at each, to and including December, 1884, from the records on file at the office of the Chief Signal Officer of the Army.]

Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Mean annual.*
Boise City, Idaho	2.43	1.76	1.49	1.19	1.02	0.94	0.20	0.09	0.59	1.63	0.73	2.25	.....
Cape Mendocino, Cal	2.09	2.40	2.60	3.13	1.00	0.47	0.22	0.11	0.93	1.74	1.29	2.42	.....
Fort Bidwell, Cal.†	3.41	2.52	1.82	1.62	1.35	0.58	0.26	0.17	0.36	1.19	1.86	3.13	17.44
Fort Canby, Wash.‡	8.40	9.95	8.82	3.59	3.32	2.21	1.69	1.36	3.01	4.90	9.11	7.72	64.08
	6.45	5.20	2.18	2.98	1.30	2.16	1.73	1.23	4.72	5.94	6.20	5.89	45.08
Los Angeles, Cal	2.21	4.30	3.44	2.00	0.57	0.22	(§)	(§)	(§)	0.59	0.96	3.92	.....
Olympia, Wash	8.80	9.74	5.53	4.24	2.58	1.21	0.83	0.85	2.99	5.44	7.31	9.62	.....
Portland, Oreg	7.06	7.86	6.88	3.49	2.35	1.79	0.79	0.77	1.82	4.88	7.08	8.22	.....
Red Bluff, Cal	6.08	4.47	3.55	3.09	1.20	0.28	0.01	0.04	0.42	1.43	2.20	5.36	.....
Roseburg, Oreg	6.47	4.75	3.95	3.00	1.77	1.01	0.47	0.39	0.95	2.91	3.40	6.31	.....
Sacramento, Cal	3.97	3.83	3.81	3.78	0.78	0.31	(§)	(§)	0.33	1.04	1.17	4.05	.....
San Diego, Cal	1.81	2.61	1.38	0.84	0.41	0.07	0.02	0.21	0.05	0.48	0.66	2.33	.....
Spokane Falls, Wash	2.82	3.02	1.10	1.82	1.18	1.40	1.05	0.32	1.46	2.63	1.81	2.37	.....
Tatoosh Island, Wash	13.32	6.04	2.41	3.31	4.45	3.98	1.73	5.49	6.15	6.66	11.32	11.46	.....
Winnemucca, Nev	1.18	0.95	0.89	1.03	0.91	0.72	0.13	0.10	0.39	0.63	0.48	1.27	9.68
Yuma, Ariz	0.38	0.64	0.24	0.09	0.06	0.01	0.20	0.26	0.09	0.04	0.03	0.49	.....

* This data furnished on February 14, 1885.
† From post surgeons' reports.
‡ The data in upper line is from post surgeons' reports covering the period 1871 to 1880, inclusive.
§ Inappreciable, less than .01 of an inch.

List of Signal Service stations.

Stations.	Established.	Stations.	Established.
Albany, N. Y	Dec. 22, 1873	Lewiston, Idaho	July 1, 1879
Alexander, Fort, Alaska	Aug. 1, 1881	Little Rock, Ark	July 1879
Alpena, Mich	Sept. 10, 1872	Los Angeles, Cal	July 1, 1877
Apache, Fort, Ariz	Oct. 9, 1877	Louisville, Ky	Sept. 1871
Assinaboine, Fort, Mont	Oct. 6, 1879	Lynchburg, Va	May 24, 1871
Atlanta, Ga	Sept. 25, 1878	Mackinaw City, Mich	Aug. 20, 1882
Atlantic City, N. J	Dec. 10, 1873	Macon, Fort, N. C	May 23, 1878
Augusta, Ga	Nov. 2, 1870	Maginnis, Fort, Mont	July 4, 1882
Baltimore, Md	Jan. 1, 1871	Marquette, Mich	May 1, 1871
Barnegat City, N. J	Dec. 10, 1873	Memphis, Tenn	Feb. 28, 1871
Bering Island, Bering Sea	May 22, 1882	Milwaukee, Wis	Nov. 1, 1870
Bennett, Fort, Dak	Dec. 22, 1879	Mobile, Ala	Nov. 7, 1870
Benton, Fort, Mont	Oct. 11, 1879	Montgomery, Ala	Nov. 9, 1870
Bismarck, Dak	Sept. 15, 1874	Moorhead, Minn	Jan. 1, 1881
Block Island, R. I	Sept. 1, 1880	Mount Washington, N. H	Dec. 1, 1870
Boisé City, Idaho	July 1, 1877	Nashville, Tenn	Nov. 1, 1870
Boston, Mass	Nov. 1, 1870	New Haven, Conn	Dec. 10, 1872
Brownsville, Tex	Aug. 25, 1875	New London, Conn	Jan. 10, 1871
Buffalo, N. Y	Nov. 1, 1870	New Orleans, La	Nov. 1, 1870
Buford, Fort, Dak	Oct. 23, 1878	New York, N. Y	Nov. 1, 1870
Cairo, Ill	June 1, 1871	Norfolk, Va	Jan. 1, 1871
Canby, Fort, Wash	Sept. 1, 1882	North Platte, Nebr	Sept. 18, 1874
Cape Henry, Va	Dec. 15, 1873	Olympia, Wash	July 1, 1877
Cape May, N. J	May 24, 1871	Omaha, Nebr	Nov. 1, 1870
Cape Mendocino, Cal	July 27, 1882	Ooglaamie, Alaska, Barrow Point	Oct. 17, 1881
Cedar Keys, Fla	Nov. 7, 1879	Oswego, N. Y	Nov. 1, 1870
Charleston, S. C	Jan. 5, 1871	Palestine, Tex	Dec. 3, 1881
Charlotte, N. C	Oct. 6, 1878	Pensacola, Fla	Oct. 27, 1879
Chattanooga, Tenn	Jan. 8, 1879	Philadelphia, Pa	Jan. 1, 1871
Cheyenne, Wyo	Nov. 1, 1870	Pike's Peak, Colo	Nov. 1, 1873
Chicago, Ill	Nov. 1, 1870	Pittsburgh, Pa	Nov. 1, 1870
Chimo, Fort, Ungara Bay, Labrador	July —, 1882	Poplar River, Mont	May 1, 1882
Chincoteague, Va	Mar. 16, 1880	Port Huron, Mich	July 25, 1874
Cincinnati, Ohio	Nov. 1, 1870	Portland, Me	Jan. 15, 1871
Cleveland, Ohio	Nov. 1, 1870	Portland, Oreg	Nov. 1, 1871
Columbus, Ohio	July 1, 1878	Prescott, Ariz	Nov. 19, 1873
Concho, Fort, Tex	Oct. 10, 1875	Provincetown, Mass	Feb. 15, 1882
Custer, Fort, Mont	Dec. 5, 1878	Red Bluff, Cal	July 1, 1877
Davenport, Iowa	May 24, 1871	Rio Grande City, Tex	May 28, 1875
Davis, Fort, Tex	Dec. 24, 1877	Rochester, N. Y	Nov. 1, 1870
Dayton, Wash	July 1, 1879	Roseburg, Oreg	July 15, 1877
Deadwood, Dak	Nov. 1, 1878	Sacramento, Cal	July 1, 1877
Delaware Breakwater, Del	Jan. 28, 1880	Saint Louis, Mo	Nov. 1, 1870
Denver, Colo	Nov. 19, 1871	Saint Michael's, Fort, Alaska	June 28, 1874
Des Moines, Iowa	Aug. 1, 1878	Saint Paul, Minn	Nov. 1, 1870
Detroit, Mich	Nov. 1, 1870	Saint Vincent, Minn	Sept. 5, 1880
Dodge City, Kans	Sept. 15, 1874	Salt Lake City, Utah	Mar. 22, 1874
Dubuque, Iowa	July 10, 1873	San Diego, Cal	Nov. 1, 1871
Duluth, Minn	Nov. 1, 1870	Sandusky, Ohio	Aug. 2, 1877
Eastport, Me	Apr. 1, 1873	Sandy Hook, N. J	Dec. 10, 1873
Elliott, Fort, Tex	Nov. 29, 1879	Sanford, Fla	Sept. 1, 1882
El Paso, Tex	Nov. 5, 1877	San Francisco, Cal	Mar. 8, 1871
Erie, Pa	May 25, 1873	Savannah, Ga	Jan. 1, 1871
Escanaba, Mich	May 24, 1871	Shaw, Fort, Mont	Apr. 1, 1880
Fort Smith, Ark	June 1, 1882	Shreveport, La	Sept. 3, 1871
Galveston, Tex	Apr 19, 1871	Sill, Fort, Ind. T	June 23, 1875
Grand Haven, Mich	May 24, 1871	Sitka, Alaska	Mar. 30, 1881
Grant, Fort, Ariz	Nov. 1, 1875	Smithville, N. C	Oct. 15, 1875
Hatteras, N. C	Dec. 1, 1880	Spokane Falls, Wash	Feb. 5, 1881
Helena, Mont	Oct. 15, 1879	Springfield, Ill	July 1, 1879
Huron, Dak	July 1, 1881	Stockton, Fort, Tex	Feb. 20, 1876
Indianapolis, Ind	Feb. 10, 1871	Tatvosh Island, Wash	Oct. 1, 1883
Indianola, Tex	May 1, 1872	Thomas, Camp, Ariz	Sept. 22, 1877
Jacksonville, Fla	Sept. 11, 1871	Toledo, Ohio	Nov. 1, 1870
Keokuk, Iowa	July 16, 1871	Unalashka, Alaska	Aug. 18, 1878
Key West, Fla	Nov. 1, 1870	Vicksburg, Miss	Sept. 10, 1871
Kitty Hawk, N. C	Jan. 15, 1875	Washington, D. C	Nov. 1, 1870
Knoxville, Tenn	Jan. 1, 1871	West Las Animas, Colo	Oct. 1, 1881
La Crosse, Wis	Oct. 15, 1872	Wilmington, N. C	Jan. 1, 1871
Lady Franklin Bay, Grinnell Land		Yankton, Dak	Apr. 1, 1873
Leavenworth, Kans	May 21, 1871	Yuma, Ariz	Nov. 18, 1873

APPENDIX No. 85.

STATEMENT PREPARED BY MR. G. W. MERRILL, OF NEVADA, IN REGARD TO THE COMMERCIAL, INDUSTRIAL, AND TRANSPORTATION INTERESTS OF THAT STATE.

BOUNDARIES AND AREA OF THE STATE.

Commencing at the northwest corner of Utah Territory and the southern boundary of Idaho, at the intersection of the thirty-seventh degree of longitude west from Washington (and 114° W from Greenwich) and in latitude 40° N., and running thence west along the southern line of Idaho and Oregon to longitude 43° W. from Washington (and 120° W. from Greenwich), thence south along the eastern line of California to latitude 39° N., which falls in the southeastern part of Lake Tahoe; thence southeasterly along the California line to the intersection with the Colorado River, in latitude 35° N., and opposite Fort Mojave; thence north and easterly up the center of the Colorado River to the intersection with the thirty-seventh degree of longitude west from Washington and the western line of Utah Territory; thence north along the said western line of Utah Territory to the place of beginning; containing within the said above-described boundaries 112,090 square miles, or 71,737,741 acres. By comparison with other states of the Union it will be seen that the area of Nevada exceeds the total areas of Maine, Massachusetts, New Hampshire, Connecticut, Rhode Island, Vermont, New York, and Delaware by 505 square miles.

TOPOGRAPHY.

Nevada lies in the extreme northwestern portion of the Great Basin and has an average elevation of about 4,000 feet above the level of the sea. The divide between the Columbia River and the Great Basin runs through the northern portion of the State. The mountains forming this divide furnish, on the north, the heads of supply for Bruneau, Salmon, and Owyhee Rivers, which flow into the Snake, thence to the Pacific Ocean via the Columbia River, and on the south the waters find their way into the Humboldt, or spreading out form meadows in the mountain basins, and smaller valleys between mountain spurs.

That portion of the State lying south of the Humboldt River is traversed by high, isolated ranges of mountains, bearing a northerly and southerly direction, with wide low passes here and there, and separated by valleys ranging from 5 to 20 miles in width, making all portions of the State easy of access. Rugged and rocky, the mountains tower above the valleys, rising abruptly to the height of 3,000 or 4,000 feet, their slopes being covered with sage-brush and bunch-grass, with here and there a range of nut, pine, cedar, and mahogany timber. Their height and ruggedness is assurance of plenty of water, for the deep cañons, catching the drift snows which fall in winter, hold it as a reservoir for summer supply.

In that portion of the Humboldt River the mountain ranges are more irregular in their trend and less broken in general, having broader bases, more foot-hills, and more roling slopes, being less rocky in character, less timbered, and more grassy. The passes are not as low or easy, being over higher summits and more rolling country. There is more water here, as the snows of winter fall deeper and drifting places are more numerous. The valleys are not as wide as those south of the Humboldt, but more grassy, the soil more firm and much better watered.

There are several streams intersecting different portions of the State, notably the Humboldt River, running nearly across the center portion from east to west; the Carson, Walker, Truckee, and Reese Rivers, in the western and central part; branches of the Owyhee and Salmon, in the north, and the Colorado River forming the boundary line on the south. The greater part of the streams in the interior of the State have no visible outlet, but sink and disappear in the valleys. In some instances the *streams run* along the valley on the surface for a long distance, then disappear, afterward reappearing on the surface only to disappear and reappear alternately for hundreds of miles, thus enabling the soil to yield a rich harvest, and dotting the valley

with farms and meadows, while in the mountains which rise on either side are located the gold and silver bearing quartz lodes.

The points where a stream terminates are generally termed "sinks," as the "sink of the Humboldt" and "sink of the Carson," denoting the place where the waters gradually spread out over a large area, and without any visible outlet disappear through evaporation, or are drank up by the alluvial soil.

CLIMATE.

Nevada being situated on the border of the arid region of the Great Basin, the chief characteristic of its climate is its dryness. Dew seldom, if ever, falls, and no malaria exists. The rarity of the atmosphere makes enjoyable the surrounding scenery, bringing out in bold relief the varied form of the distant mountains. The sun shines bright and clear through a cloudless sky the greater part of the year. The days, though warm in summer, do not impress one with the uselessness of existence; neither does one live in constant dread of the night affording no relief, for with the setting of the sun the evening descends with its cool, dry breath and prepares one for another day.

The winter nights are cold, but the days are pleasant. The spring opens in May, and June is in the middle of summer. The only knowledge of the approach of Fall is in the frosts of night and the "sere and yellow leaf" about the middle of September; then a long stretch of the most pleasant weather ever experienced, when suddenly, about the middle of December, winter sets in, but not severe. The snow falls deep in the mountains, but the valleys do not retain it long. Sleighing seldom lasts a week at a time, while many winters pass without any at all. Though the mercury may fall below zero several degrees, yet the cold is not piercing; the marrow is not chilled as in climates more moist. The winter ends as suddenly as it began, giving the impression of but two seasons, summer and winter. Thunder showers are quite frequent in the early summer months, producing a freshness as exhilarating as it is enjoyable. These showers, of late years, have increased in frequency, and the rains of California seem to spill over the Sierras more often in winter than in the past. During the last winter there was more rain than snow, and grasses this year, as a consequence, are more thrifty. Altogether the climate of Nevada cannot be surpassed. It has more of pleasant sunshine, lovely nights, and beautiful weather than any other portion of the United States.

SOIL.

The soil in the valleys of Nevada is very much varied in character, yet having the general characteristic of a loose, sandy loam. The richness and capabilities of the virgin soil are indicated by the size of the sage-brush, which grows everywhere, both in the mountains and valleys. Wherever high, thick sage is found there is the most productive soil, rather than where the brush grows low and thin. Greasewood indicates a deep rich soil, but impregnated with alkali, and grows best in an ashy soil. Rabbit brush, a very inflammable bush, grows rankest in a cold, damp soil, and is often found in the bottom lands where alkali is abundant.

The natural meadows are, as a general thing, unfit for other cultivation than for hay, the soil being too cold and moist for any other crop. The wild natural grasses of these meadows being very nutritious furnish the best hay, and scarcely any cultivation is necessary for a large crop.

The most productive is the sandy sage-brush soil of the valleys and cañons of the mountains, it being warmer and looser and more easily cultivated. Wherever irrigation is possible the most beneficial results have been obtained.

The soil in the valley portion of the State is more or less impregnated with salt or alkali, and salt marshes and alkali flats are prevalent in the lowest depressions of these valleys.

Outside these flats, however, it is very productive wherever water can be brought to it, as the experiment in several instances has proven.

The mountain soil cannot be cultivated, as the slopes are too abrupt and the earth too rocky and thin; but wherever mountain valleys occur a deep rich loam, capable of a high state of cultivation, is found, and furnishes some of the prettiest farming spots in the State.

FARMING.

More attention has been paid to farming of late years than formerly. The excitement of new mining camps, the absence of railroads, and the consequent activity of teaming and staging in days gone by, created fancy prices for hay and grain. The choice natural spots were selected, and the farmer's attention was entirely engrossed in raising as much hay and barley as possible. Very little attention was paid the soil

r other character of crops than barley, so long as a good market at their very door ras had for what they produced. Now that railroads have cut across the country, nd the mining fever has abated, occasioning the withdrawing of teams and stages n many parts, overproduction of hay and grain, and a consequent reduction of prices nas ensued, and farmers who can no longer make use of their door-sills as a market-place complain of dull times.

Those who recognize the science of farming, and who connect the business principle of making a market at home whenever such is possible, make use of this "overproduction" of hay and grain by getting cattle, sheep, and hogs to consume it, and then disposing of the consumers, connecting in this manner stock-raising and farming.

In the natural bottoms, formed by the sinks of creeks or overflow of streams and rivers, tons of hay are cut annually from the natural wild grasses that grow there, furnishing fattening food for the cattle in winter. These grasses yield but one crop a year, and average 1½ tons to the acre. Considerable redtop, clover, and timothy grow in the bottoms, together with the wire-grass, making a very nutritious hay. Alfalfa (Chili clover) is raised in abundance on irrigated lands, and makes the very best of hay, there being two, and sometimes three, crops cut in a season, yielding on an average 2 tons to the acre to each crop, and in favored localities even more. Wheat and barley grow well, and are good paying crops, from 40 to 60 bushels to the acre of a good quality being produced. The wheat grown in Nevada is of exceptional size and weight, and is sought after by California wheat merchants to bring up to the standard their low grade wheat. Potatoes, large and well formed, of the very best quality, grow in abundance, and are shipped to California, commanding the very best of prices on account of their excellence. All the grains, cereals, and vegetables peculiar to that latitude can be, and are, raised in abundance and superior perfection. All the fruits and berries of a northern climate are produced in that State, and being free from insects, worms, and disease, thrive well. Late spring frosts sometimes nip the fruits, but as a rule the yield is good. Apple trees, so far as tested, have done remarkably well, the yield being large and the fruit of excellent size and quality. Slight experience by a few lead to the conviction that in a short time the grape will be found to flourish as well in Nevada as in California or France.

So much attention has been paid by the people to mining in that State that agriculture, grazing, or anything else has had to take care of itself—all legislation being toward the protecting and encouraging of mining, while other interests and industries of the State have received but little consideration. The people begin, however, to realize that agriculture and grazing make mining more possible, and that each goes toward making up the wealth of a country. Nevada is not generally classed as an agricultural State, yet the sage-brush land is proving unequaled for wheat raising, and that it has many acres of fine land is well known to its people.

As an experiment in a contest with some parties in California for a premium, a farmer in Smith Valley raised from 1 pound of Royal Australian wheat 342 pounds. There are many parts of Nevada having many acres of as fine land as Smith Valley. From the latest and most reliable reports it is ascertained that there was raised in the State in 1884, 300,000 bushels of wheat, 200,000 bushels of oats, 200,000 bushels of potatoes, 700,000 bushels of barley, and 175,000 tons of hay, beside other farm and garden products, of which it is impossible to obtain accurate reports. Statistics furnish the information that in the year 1875, Nevada produced of the foregoing agricultural products 55,916 bushels of oats; 295,472 bushels of barley; 228,866 bushels of wheat; 129,241 bushels of potatoes, and 33,855 tons of hay, thus clearly showing there is a gradual and marked increase in agriculture, and that the State has important agricultural resources. The valleys of the State within possibility of irrigation, offer many hundreds of thousands of acres to this interest, and these acres are being utilized rapidly.

As an evidence of the productiveness of the soil there are instances in the present year where 53 bushels of wheat to the acre have been produced; 70 bushels of barley, and in one instance over 100 bushels of oats to the acre have been grown. These, however, are exceptional cases, but are evidence of what might be accomplished by proper cultivation. The average product to the acre of land under cultivation is as follows: Wheat, 30 bushels; barley, 35 bushels; oats, 60 bushels.

The soil is well adapted to the production of potatoes, and the average yield is about 100 bushels to the acre, though in many instances this yield has been greatly exceeded, and in quality this product is vastly superior to the potatoes of California or the Eastern States.

The valleys within reach of the Truckee, Humboldt, Carson, Walker, and other rivers of the State are not one-quarter occupied yet. They contain large tracts of the best soil. Enough water goes to waste every year in these streams to irrigate all the land within reach. The agricultural interests are constantly increasing, and by proper encouragement and legislation they will keep on increasing. Farms are becoming valuable, and the fast growing orchards, the substantial fences and comforta-

ble farm-houses denote prosperity and permanency in the many beautiful valleys of that State. And the State has many very beautiful and productive valleys where farming is carried on extensively and profitably, and where the farms present as fine an appearance as in any State in the Union. Farmers are always sure of a crop, as irrigation is proof against drought.

Forming a part of or closely allied to the farming or agricultural interests are stock-raising and grazing.

IRRIGATION.

Vast areas of land in the State need only water to be made productive and transform what is now apparently a barren waste into valuable farms. Several prominent cattle firms are at present irrigating large tracts of heretofore unproductive land with surprising results, having extensive reservoirs and canals. It is necessary for them to own large tracts for grazing purposes, and the best portions are being turned into created pastures. Wherever the test has been made, and water has been brought from the mountains to the valleys by means of ditches and pipes, or brought to the surface by artesian wells, the hitherto non-productive soil has literally blossomed with grain, fruits, grasses, and cereals of every description. Strikingly is this illustrated by riding along through Humboldt country, on the Central Pacific Railroad, when, after traversing hundreds of miles of a barren dreary country, the traveler emerges from the car to find himself gazing upon beds of roses, fruit-trees of every description, luxuriant fields of grass and farm products of all kinds adorning acres of land around, while a fountain of water, drawn from the mountains beyond, is a constant reminder of the secret cause of this beautiful oasis in the desert, notably also is this characteristic of the soil exhibited in Carson, Clover, Mason, Huntington, Ruby, Reese River, and, in fact, all the valleys of the State where the water has been systematically utilized.

No doubt that by means of a proper system of reservoirs a large area of Nevada could be made a garden of vegetation, and the uninhabited regions dotted with towns and cities, and the waterless sage-brush plains transformed into green fields. Some general system of irrigation should be adopted and doubtless will be in the near future; agitation has already commenced and undoubtedly will continue to increase, directed to the idea of constructing large reservoirs for the purpose of holding in reserve large bodies of water for use in the dry season. Already much attention is being paid to this system of irrigation, and desirable sites for reservoirs for the storing of water are being sought after. It is evident a general system of irrigation is sadly needed, and to this end a bill was introduced during the last legislature, to establish a State board of irrigation, whose business it was to be to investigate this matter and report desirable places for storing and saving water, and also to superintend the management of State canals for irrigating purposes. The object was to create a State investment whereby the waste water could be utilized on the sage-brush land at a profit to the State and to settlers; but by a local interest expressed in the bill it was defeated. A State board of irrigation doubtless will be formed and laws enacted for the management of water-ways of the State.' The rivers and creeks furnish enough water to irrigate ten times the amount at present irrigated; more water is wasted by carelessness every year than is used, simply because there is no check. A certain number of farmers unite and build a ditch from a river to irrigate their lands; an adjoining set build another for their lands, and so on, until several ditches are in operation. The ditches being under separate management, conflicts ensue and damage suits follow, as one company fails to take care of its waste water, allowing it to run on to the farm of a stockholder of another company, thus wasting water that might be used to an advantage in another direction. The mill managers along the Carson River last year were complaining of the scarcity of the water, and upon examination by a committee appointed to investigate the matter, it was found that, while some ranchers were using the water economically, others were allowing it to run to waste and receiving no benefits whatever by so doing, while still others were actually drowning out their grain to keep an unfriendly neighbor from getting his share of the water. The disposing of lands in elongated tracts along the course of a stream and forever debarring the using of that water for lands outside by another, is encouraging a species of riparian rights that retards the country in its growth and settlement and puts a check on irrigation. There are now eight hundred irrigating ditches in the State, aggregating in round numbers 2,000 miles, and successfully irrigating 150,000 acres of land. If the General Government could be persuaded to give the State all the unappropriated lands within its borders under due restrictions and proper precautions, a general system of irrigation could then be easily inaugurated and a State now in the front rank as a producer of gold and silver bullion would soon take a similar position among the agricultural States of the Union, for it has been demonstrated beyond doubt that the lands of Nevada are sterile only because of aridity.

GRAZING.

The impression abroad is that Nevada is strictly a mining State, and that no other interests exist there. The error is very apparent when one notices the reports of constantly growing farming communities and the large and constant shipment of beeves from the State. Nevada is fast assuming the position of a great cattle State. The bunch grasses of the mountains afford excellent pasturage during the summer, while the seeming barren waste of deserts is the safeguard of winter. The snows of winter, falling deeply in the mountains, drive the cattle, horses, and sheep to the dry valleys and deserts, where the snow-fall is never deep, and they find good browsing on the white and black sage and water in the pools of melted snow. No long stretches of wide prairie existing in the State, the fierce winds of winter do not gather that force that drives cattle for miles and miles against all resistance, but the high broken ranges of mountains stand as bulwarks to break the winds and shelter is afforded in every valley. Farming being confined to the lands in the valleys bordering immediately on a stream, the vast territory outside is devoted to grazing, and instead of Nevada being a solitary mining camp among the barren mountains, thousands of cattle, horses, and sheep find fattening and nutritious food in the bunch grasses that grow in the valleys and the "barren mountains." The beef and mutton produced in the State are of exceptional quality, being juicy, firm, and tender, and are sought after by butchering firms of more noted States. On account of its superior climate Nevada is looked upon as the natural home of the horse, and for breeding purposes of both horses and cattle it is equal, if not superior, to Kentucky. Cattlemen of the South who have examined different countries claim Nevada as the best territory for that business. Cattle ranges are being sought for, and a large acreage is being sold annually for that purpose. Good grazing land is in demand, and large investments in stock ranges have been made in the last year by foreign firms. Several ranges have been disposed of to residents of California. English capital, also, has been used purchasing ranges in Elko County, and over a million dollars have changed hands in the last year. Although the assessor's reports do not show the fact, yet it is ascertained from reliable authority, stockmen, associations, &c., that there are nearly 700,000 head of cattle in the State and 300,000 head of sheep.

"The hills and valleys," says the Reno Journal, "are fast being utilized by growing herds of improved stock. The superb climate, pure water, and nutritious grasses stand approved in the admitted superior health of the herds of horses, cattle, and sheep." Blooded stock from the East and West have been imported during the past few years, and the farmers have taken a great deal of interest in the best breeds of cattle.

In the month of November, 1884, a gentleman in Churchill County imported a herd of the hornless Galloway cattle, costing him $40,000.

The Holstein, as a fancy stock, surpasses all others; they cost about $3,000 or $4,000 a head, and are credited with giving fifty quarts of milk a day, and have to be milked morning, noon, and night. The Jersey, Guernsey, Alderney, Serk, and Herm have been and are being introduced into the State, but the general opinion coincides with the view that the Durham is the most profitable for two reasons: They produce large quantities of milk and beef, growing very large and taking on flesh in a short time. Up to within the past few years Nevada has received a large number of cattle from Texas, which were driven across the country, but of late years this source of supply has greatly diminished.

Concerning improved breeds of cattle, the *Silver State*, a paper published in Humboldt County, under date of October 28, 1884, has the following:

"The Nevada Land and Cattle Company, whose headquarters are at Kelly Creek, in the eastern part of the county, sold last week to Chapman & Horn, of San Francisco, 1,000 head of beef cattle. Some 400 head of this purchase were shipped last week from Iron Point. Cattle dealers say the beeves will dress on an average nearly 700 pounds each. This shows the effect of introducing good breeds of cattle among Nevada herds. Some years ago T. D. Parkinson, who is managing the affairs of the company, bought some short-horn Durhams from Jesse D. Carr's herds in California, and took them to the Kelly Creek ranch. From these and their progeny the company sell a number of thoroughbred bulls annually, besides improving their own herds by crossing the ordinary stock with Durhams. The graded stock, some of which are as large as thoroughbreds, thrive as well as the native breeds on the plains and mountain ranges. Last year the Kelly Creek ranch, in this county, and the I. L. ranch, Elko County, which adjoins it, and on which the cattle were also crossed with Durhams, were consolidated under the name of the Nevada Land and Cattle Company. On these ranches the beeves purchased by Horn & Chapman were raised, and stockmen say many of them are as fine-limbed and as large in size as pure-blooded Durhams. *It is* also said that these improved breeds are worth from $7 to $10 a head *more than* ordinary cattle, and as they stand the winters and do as well on the Nevada *cattle* ranges as the common breeds of cattle that ought to be a sufficient indu

ent for all stock owners to improve their herds. As the price of cattle keeps up, ith no prospect of a material reduction, no doubt in a few years Nevada ranges will l be stocked with improved breeds of cattle."

The climate seems especially adapted to the growth of thoroughbreds, and when idemics come the cattle can be driven to the mountains for safety.

It is quite impossible to obtain accurate figures showing amount of beef exported om the State for a given period, but in order that some idea of this interest may be rmed, I will say that on the 1st of December last it was estimated by cattlemen that here was about 35,000 head of beef cattle, which would average about 700 pounds ch, dressed, available for the winter season.

The price per pound is 7½ to 8 cents. During one week in the month of January, 85, there was shipped from Winnemucca, a station on the Central Pacific road to alifornia 106 cars of beeves, averaging 19 head per car, making a total of 2,014 beeves. he principal markets for beef are San Francisco and Chicago, being transported er the Central Pacific Railroad and connecting lines, where it commands the high- t market price.

WOOL GROWING.

The wool-growing interests are rapidly assuming a front rank. The wool clip in 70 was 27,000 pounds, in 1880 655,000 pounds, while in 1884 the reports of assessors om all the counties show the yield to have been nearly 1,000,000 pounds.

Winnemucca, a station on the line of the Central Pacific Railroad, is the principal ipping point for Humboldt County. In regard to the shipments from that station e *Silver State* says:

"Through the courtesy of J. A. McBride, the obliging agent of the Central Pacific ilroad at this place, we are enabled to give the following statement of the ship- nts of beeves, horses, wool, and fruit from Winnemucca during the year 1884, hich is compiled from the railroad books: Of beef cattle there were shipped to San ancisco, 13,290 head; to Oakland stock-yards, 3,624; to San José, 1,270; to Merced, 53; to Suisun, 994; to Sacramento, 381; to Athlone, 375; to other points, 295; making e total shipments of beef cattle 21,282 head. There were shipped during the last ar 341 horses, mostly to California. The wool shipments amounted to 309,375 unds, of which 278,451 pounds were shipped direct to Boston and Philadelphia and 24 pounds to San Francisco. The shipment of green fruit is a new industry, and ounted during the summer and fall to 1,055 boxes, aggregating 62,495 pounds. e cattle shipments in 1880 aggregated 21,302 head; in 1881, 29,382 head. This s exclusive of 1,600 dressed beeves shipped by the refrigerator company, and about 00 calves. In 1882 the cattle shipments aggregated 20,975 head, exclusive of 1,200 essed beeves shipped by the refrigerator company; in 1883 the cattle shipments gregated 18,744. In 1881 the wool shipments aggregated 227,127 pounds; in 1882, 2,585 pounds; in 1883, 400,575 pounds."

MINES AND MINING.

Mining generally, at present, is very quiet. Several localities, however, are pro- oing well and new developments are constantly being made. Capital is slow to vest, and many good prospects are lying dormant, waiting for some one to perceive d make use of their value. The State is full of mineral that can be easily handled, t, unfortunately, the whole attention of the people has heretofore been directed to e fluctuations of the stock market rather than toward an honest development of e mines.

Because the bullion product has fallen off the false impression has gone abroad that vada has ceased to be a metal-producing State. One controlling cause of decline the mining interests is the reaction from the high-pressure principle of past years. etofore, whenever a piece of rock containing mineral was discovered, a claim was ted off, a company formed, stock issued, and the claim floated on the market. re suddenly arose in the minds of the people a desire to make a fortune from ning; their cupidity became excited; the stock was sold; the "bulls" sent the ; the "bears" pulled it down regardless of the merits of the mine; assess- s followed; a few of the properly managed mines paid dividends, which gave angement to invest in others, the worthless depending for their standing on the es of the producing mines, until the burden became too great and the crash which carried with it the confidence of the people; and all mines, good, bad, or erent, were looked upon as mere stock jobbing deals and non-producers. The ing interest has not, as yet, recovered, but is gaining slowly from the demoraliz- fects of the grand revelry of flush times. On the Comstock mines, in Storey ty, grand and expensive machinery has been erected, a depth of 3,200 feet has attained, *and over $300,000,000* have been taken from these mines within the *twenty years. The county* assessor's reports of Storey County show that in 1862

there were 83,030 tons of ore crushed, valued at $1,445,381, while that of 1883 shows 122,068 tons crushed, valued at $1,910,504, and full, reliable statements of the various companies show a total yield for the year 1884 of $2,432,884, showing a gain of $465,123 in 1883 and $522,380 in 1884. In twenty years, as shown by assessors' reports, the Comstock lode has produced $180,000,000 of silver and $145,000,000 in gold, and disbursed in dividends $120,000,000, besides disbursing $4,000,000 annually in wages.

Outside the Comstock nearly $100,000,000 more have been produced in the State, adding to the tangible wealth of the world over $425,000,000 in silver and gold. This is from assessors' reports, but it is believed true reports would show nearer $[illegible]0,000,000, as a vast amount has been produced of which no reports were ever made.

Other localities outside of the Comstock are looking better. The mining companies at Candelaria have commenced operations again, and a new impetus is given mining in that locality. The mills at Belleville are actively engaged; Tuscarora is steadily at work. Some of the richest specimens ever found have lately been exhumed from the lower workings of the Navajo mine at that place. Large shipments of bullion are recorded from the Grand Prize, Navajo, and other mines of Tuscarora, and the prospect for future production is most encouraging. Austin keeps on in the even tenor of its way, producing as steadily as ever. The Manhattan Company works a larger force than it has for several years past, and is producing bullion in good quantity. There are employed at the present time about the mill and mine of the Manhattan Company about 400 men. The product for the year 1884 to December 31 was $1,013,603.50.

The mines of Paradise Valley are doing remarkably well, and the country round about being farming land, a lively appearance is given the place, and great results are being realized.

The Pyramid Lake mines, after many experiments, have at last been conquered, and are producing well.

In the Garfield district, Esmeralda County, large developments have been made by private enterprise, and large bodies of high-grade ores have been uncovered. Although Eureka shows a slight decrease in production, yet it is doing well, and two mining companies, the Richmond and the Eureka Consolidated, have shipped during the year 1884 $1,420,521 in gold and silver bullion.

Sprucemont district, Elko County, has one mine, Harrel & Schreff, that promises to be a source of wealth to its owners, as extensive bodies of base ore have been developed and are being worked successfully. Many other instances of prosperous workings might be cited to show that wherever business principles have entered in the management of a mine success has followed, and that the State, instead of being on the down grade, is on a more solid basis than ever before. There are a large number of mines held by private individuals, of which nothing is ever heard, that are producing well and pouring wealth into the laps of the owners.

The developments being made by the Geological Survey in the neighborhood of Steamboat Springs are extremely interesting, and great interest awaits their reports. The geologists are making a critical examination of the country for about 4 miles around these springs, and much attention is being paid to the curious deposits of mineral in the burned-out ground to the west and south of these wonderful geysers. These springs are constantly changing position, forming new crevices and filling up old ones with deposits of cinnabar. In the older and cooler ground about the extinct springs valuable deposits of cinnabar, sulphur, copper, and other metals and minerals are found. Native aluminite, or sulphate of aluminum, is found here, and is believed to exist in large quantities. The profitable working of this ground, especially its deposits of cinnabar, is only a question of time and experience, as the adjuncts in the way of fuel, water, and transportation are easily attainable.

In order to show the fluctuations of the amount of gold and silver produced in the State since its organization, I submit the following table as compiled by the State comptroller:

Statement showing the net proceeds of mines from the organization of the State to the year 1883, inclusive.

Years.	Net proceeds of mines.	Years.	Net proceeds of mines.
1865	$3,286,672 34	1875	$17,003,860 95
1866	2,207,880 85	1876	24,167,408 34
1867	7,041,536 56	1877	24,033,532 53
1868	6,534,169 98	1878	23,045,969 11
1869	4,252,897 29	1879	7,268,361 56
1870	5,910,398 16	1880	4,496,738 91
1871	7,856,971 73	1881	2,542,371 66
1872	7,814,176 97	1882	1,740,554 48
1873	14,209,048 58	1883	1,948,497 [illegible]
1874	13,899,578 17		

For the year ending September 30, 1882, the quantity of ore worked was 372,278 tons, and the gross yield or value of gold and silver was $7,724,022. For the year ending September 30, 1883, the quantity of ore worked was 379,381 tons, and the gross yield or value of gold and silver was $7,487,634. In the year 1884 the gross yield or value according to most reliable data was about $7,500,000, while the total yield or value of gold, silver, copper, and lead in 1883 was $8,771,621, and in 1884, $8,888,939. The number of quartz mills in the State are 121, and the smelting furnaces number 24

Although the mining interest shows a falling off in production, as compared with the bonanza yield of 1876–'77, there is decidedly a better feeling in regard to good mining property, and the outlook is much more cheering than heretofore in late years. The report of the Hon. H. C. Burchard, Director of the United States Mint, shows for the year 1883, on page 669, a decrease in production in all the States and Territories, excepting Montana and Idaho. So if it is decrease in production one is looking for, he can find it in other States and Territories as well as in Nevada. This State is yet third in production of gold and silver, California being first, and Colorado next.

The constant agitation of the silver question by Congress and Wall street tends toward decreased production and discouragement to investing in mining property. Mining fluctuations cause hope and activity one day, despair and dullness the next. No permanent interest attaches to mining; everything is done upon the good-enough-for-to-day plan, and everybody is ready to leave at the first sign of distress. The excitement of a new mining camp calls to it that migratory class of people who are constantly and ceaselessly chasing that will-o'-the-wisp, fortune, and who are living upon the expectations of suddenly acquired wealth. The operatives themselves become tainted with this spirit, and to-day they are seen in Virginia City, a short time after in Cœur d'Alene, the summer finds them in Alaska, and the winter greets them in Arizona. They are constantly changing, for as the glory of one camp departs and employment grows dull, they seek the more promising field a newer camp offers. They are always on the travel, and the railroad and stage companies derive a great income in consequence. A mining community is essentially a commercial community. Its exports are its productions of the precious and non-precious metals, and its imports are everything required in the construction and maintenance of a town, and the food and clothing of the inhabitants. One mining camp of good size furnishes more transportation for railroads, &c., than a large stretch of agricultural country, as everything, fruits, vegetables, fuel, clothing, and articles of general merchandise is purchased abroad and shipped in. This is necessarily so in an essentially mining country, as mines are generally situated among the "barren mountains" away from farming communities. Take Virginia City for example.

This city is situated on the steep, rocky eastern slope of Mount Davidson, 6 miles from the Carson River, and elevated nearly 2,000 feet above it. The country intervening is mountainous, is devoid of water and timber, and unfit for cultivation. It is indeed a "barren mountain." The only water supply is from Marlette Lake, distant about 22 miles in the Sierra Nevada Mountains, whence it is brought by ditches, flumes, tunnels, and pipe line to the city. The lumber for timbering the mines is brought from Lake Tahoe, and most of the fuel is shipped from the same source. All the supplies of food and general merchandise are obtained from California or the East. There is not a solitary manufactory in Virginia City. There is not a wholesale house in the State of Nevada. Everything in the way of general merchandise is imported in a mining camp.

The surrounding country supplies Virginia and other mining towns with potatoes, hay and grain, vegetables and fruits in season, but merchandise in general is imported from the East or from California. The State does not raise all that is consumed, but all is consumed that is raised. Nothing but bullion and a few car-loads of wheat that are shipped every year to California for grading purposes is exported.

BORAX, SALT, ETC.

In the barren wastes, where nothing grows and everything looks desolate, is found the wealth that lies in vast fields of borax, salt, niter, soda, sulphur, &c.

In Esmeralda, Churchill, Washoe, Humboldt, Lincoln, and Nye Counties are found valuable deposits of these minerals. Borate of lime is found on the borders of the Lower Carson Sink, but to what extent is not developed, as but little, if anything, has been done in that locality.

The borax fields of Esmeralda County, however, are proving to be of great value and extent, and are being steadily worked with a profit.

The shipment for 1883 over the Carson and Colorado Railroad from Rhodes's Marsh, in the State, were 22,203 tons of borax and 450 tons of borate of lime. During 1884 the shipments amounted to 2,100 tons of borax, no borate of lime having been shipped.

The borax works of Sand Springs Marsh, in Churchill County, have ceased pro

duction on account of low prices and cost of transportation, as everything had to be freighted a long distance by teams over a very sandy country.

Many valuable marshes lying at a distance from railroads must remain undeveloped until rates of transportation shall become low enough to warrant their being worked. Freighting is at present too high.

There is enough salt in the Humboldt Salt Marsh, in Churchill County, to supply the world, but other localities, on account of easier and less expensive transportation, are being utilized.

The Rhodes Marsh, on the line of the Carson and Colorado Railroad, besides producing immense quantities of borax, furnishes the finest of table and packing salt, and during 1884 shipped 2,337 tons.

Shipments of salt are being constantly made from the Lute, and also the Crystal Salt Company's works, on the line of the Central Pacific Railroad, in Churchill County. Sand Springs Salt Marsh, in the same county, but situated a long distance from the railroad, is a wonderful marsh; while the salt from the others is obtained from vats, here it is dug out in crystallized form. Rock salt of remarkable purity is also found near the Rio Virgin, in Lincoln County. The Murphy Works, in Washoe County, though a long distance from the railroad, ship tons of table salt annually, and supply Northern California with this article, both for table and packing. This salt is taken from the surface of the marsh, where it forms by incrustation.

The remarkably pure sulphur deposits of Humboldt County are furnishing material for large shipments without any sign of diminishing the supply.

Owing to the cheapness of production in Peru, the niter beds of the sink of the Humboldt remain untouched. It is only a question of time, however, that the value of these deposits will be fully appreciated and that they will be worked to a good profit, as they are of fine quality and large extent.

Lignite has been found in the neighborhood of Elka, but to what extent has never been developed. Several shafts have been sunk and tunnels run in, but to no distance. Enough has been done to demonstrate the presence of coal. The opening of beds of coal in this vicinity would result in great wealth to the possessors.

MANUFACTURES.

Manufactures of any kind are so seldom heard of in Nevada as to be hardly worth mentioning. The State contains 10 grist and flour mills, 3 planing and 7 saw mills, and one box factory, the latter being situated in Carson.

The Truckee River furnishes power enough to run all the cotton mills of Massachusetts, but the only use made of this power is for 2 flour mills and 1 foundry at Reno. This river following along the line of the Central Pacific Railroad, is the best situated for manufacturing purposes, and sites for reduction works and woolen mills are easily obtainable. On account of high rates of transportation, high wages and high prices for raw material, manufactures languish and importations are large. We import all our boots, shoes, clothing, furniture, hams, bacon, lard, flour (although we manufacture a large amount of flour), and nearly all the necessaries of life. There are no packing establishments, and yet hogs can be and are raised in great numbers. A few, and a very few, of them corn beef, keep hogs, and cure their hams and make their own bacon. There is no reason why packing houses should not be a success there, as everything is in their favor. Ranchers might congregate, as the Mormons do, and have co-operative packing establishments that would be a source of profit to them, both as a business and as a means of disposing of their farm products. Although hides are abundant they cannot do tanning at a profit, as the freight on tanbark is too expensive and none grows in the State.

Wool is produced in great quantities, and yet no woolen mills exist in the State. When asked why use is not made of the great power that dashes over the rocky beds of our mountain streams, or flows swiftly through the channels of Nevada's rivers, the answer invariably is, transportation is too high.

RAILROADS.

The Central Pacific Railroad enters Nevada at Verdi, on the California line, and traverses the State from west to east. It is of standard gauge, steel rails, and is 452 miles in length in the State. This is the grand trunk line, and from it several feeders, in the way of shorter railroads, run into the heart of the country. This is the only transcontinental line in the State.

VIRGINIA AND TRUCKEE RAILROAD.

The Virginia and Truckee Railroad is a standard gauge with steel rails. Leaving Reno at the Truckee River, on the line of the Central Pacific Railroad, this road runs south through the fertile Truckee, Pleasant, Washoe, and Eagle Valleys to Carson

City, whence it turns to the east and following down the Carson River a few miles passes northward to the Mound House, thence to Virginia City, which is its terminus, making a length of 52 miles. The business of this road mainly depends on the demands of the Comstock, as the freight for that section of country over the Central Pacific Railroad is switched off at Reno and handled by this company. The supplies of fuel and lumber for the mines, &c., from the Sierra Nevada Mountains are all transported over this road. All the supplies for the southern country are carried to the Mound House and transferred to the Carson and Colorado Railroad.

CARSON AND COLORADO RAILROAD (narrow gauge).

Beginning at the Mound House, a station on the Virginia and Truckee Railroad, 10 miles from Carson City, this road runs in an easterly direction, passing the town of Dayton and following down the Carson River to Fort Churchill, cuts across the country to the southeast, passing through the agricultural portion of Mason Valley, thence southerly along Walker River, through the Indian reservation, along the east side of Walker Lake to Hawthorne; thence through the mineral region of Esmeralda County, the borax and salt fields of Rhodes Marsh on to Belleville and Candelaria; thence over the White Mountains into Owens River Valley, in Inyo County, California, and following down the Owens River to its sink, a distance of 298 miles from the Mound House. The length of line in the State is 192 miles, passing through a country full of undeveloped resources and affording facilities for the development of its mines and transportation for its products.

NEVADA AND OREGON RAILROAD (narrow gauge).

This road begins at Reno on the Central Pacific Railroad, and running in a northwesterly direction, at a distance of 28 miles crosses the State line into Sierra and Lassen Counties, California. After much adversity and many mismanagements this road has passed into the hands of New York capitalists, who are at present extending it into the agricultural, pastoral, and mineral regions of the northeastern counties of California. A country rich in timber, minerals, and agriculture is before it.

NEVADA CENTRAL RAILROAD (narrow gauge).

Beginning at Battle Mountain, on the Central Pacific Railroad, this road runs in a southerly direction, following Reese River for 93 miles to Ledley, a station 2 miles from the town of Austin. The country through which the road passes being sterile in character and sparsely settled, the bulk of the business is derived from Austin. It being a mining town of considerable importance, all its supplies of merchandise, fuel, &c., are brought in over this road. The extension of this road further south has been abandoned.

AUSTIN CITY RAILROAD (narrow gauge).

This is a short but remarkable piece of road. It is but 3 miles in length, running from Ledley, the terminus of the Nevada Central Railroad, to the town of Austin and the Manhattan Company's mines. The grades on this road are very heavy, being in places as high as 400 feet to the mile, and a few curves being as sharp as 40 degrees. It climbs the abrupt slope of the mountain side by means of a succession of Y's. With a very powerful engine only two, and sometimes but one, loaded car can be hauled at a time.

BATTLE MOUNTAIN AND LEWIS RAILROAD (narrow gauge.)

This is a branch of the Battle Mountain and Austin Railroad, and is not at present in use.

EUREKA AND PALISADE RAILROAD (narrow gauge).

Beginning at Palisade, a station on the Central Pacific Railroad, this road runs southerly through Pine Valley over Pinon Mountains into Diamond Valley to Eureka, a distance of 90 miles. The mines around Eureka being great producers of gold, silver, and lead, and a large force of men being constantly employed, a vast amount of freight has been handled by this road. There being but little of agriculture along the route and in its vicinity, the road depends for its business on the mineral country about Eureka. On account of a less production by the temporary ceasing of the working of several prominent mines, the business has experienced a falling off *in the last two years.* The production of the county for 1883 was $1,450,000.

EUREKA AND RUBY HILL RAILROAD (narrow gauge).

This road is similar to the Austin and Ledley Railroad, as it connects Ruby Hill with Eureka. The distance by wagon road between the two places is but 2½ miles, while by the railroad it is 5. The road is full of sharp curves and heavy grades, and does the carrying trade for the Albion, Eureka, Consolidated, and Richmond mines.

LAKE TAHOE RAILROAD (narrow gauge).

This is a road belonging to the Carson and Lake Tahoe Lumber and Flume Company, and is used to carry the lumber from the summit of the Sierra Nevada Mountains, whence it is flumed to Carson City. The length of the road is 10 miles.

Exhibit showing the number of railroads in the State of Nevada and other information in reference thereto.

Name of railroads.	Gauge of road.	Quality of rail.	Terminal points.	Length.	Assessed value per mile, including rolling stock and all other property in 1884, land excepted.
				Miles.	
Central Pacific	Standard	Steel	Eastern and western boundaries of the State.	450.84	$13,720 81
Virginia and Truckee	Standard	Steel	Reno and Virginia City	51.75	18,200 45
Eureka and Palisade	3 feet	Steel	Palisade and Eureka	90	5,534 66
Nevada Central	3 feet	Iron	Battle Mountain and Austin.	93	4,616 66
Carson and Colorado	3 feet	Steel	Mound House and southern boundary of the State.	192	3,486 78
Nevada and Oregon	3 feet	Iron	Reno and western boundary of the State.	28.40	1,119 72
Lake Tahoe Narrow Gauge	3 feet	Iron	Glenbrook, Nev., to Summit, Nev.	10	3,223 68
Battle Mountain and Lewis	3 feet	Iron	Battle Mountain and Lewis.	11	.....
Eureka and Ruby Hill	3 feet	Steel	Eureka and Ruby Hill	5	10,200 00
Austin City	3 feet	Iron	Austin and Ledley	2.80	7,160 72

POPULATION.

The population of the State, like all mining communities, has been an indefinite and uncertain quantity, though yearly becoming less so as agricultural interests come to the front. In 1870 the census shows a population of 42,491, and that of 1880 a population of 62,266, while the returns to the State officials in the year 1884, partially estimated, fix the number of permanent residents at about 65,000.

The date of the admission of the State into the Union was October 31, 1864, at which time there were probably about 25,000 inhabitants, for in 1865, the year following the admission into the Union, there were but 5,907 votes cast at an election held for member of Congress.

GENERAL REMARKS.

Altogether there is just cause to feel encouraged by the present condition of the State, and to believe that for some time past the tide has been in the direction of prosperity and permanency. Wherever mining, agriculture, grazing, and manufacturing can be combined, the permenancy and wealth of a country is assured.

The grazing interests are constantly growing and high prices are being paid for ranges, making a permanent interest of tangible value.

The sales of land in the State land office show a desire for permanent investment and an appreciation of the benefits of a grazing country. These sales have increased greatly in the last few years, and will continue for some years to come, covering both farming and grazing land, as one is as much sought after as the other. During the year 1884 90,000 acres of land were sold by the State land office alone, besides that which has been applied for and sold under the various acts of Congress by the United States General Land Office. The agricultural and grazing, together with the railroad interests, represent the bulk of the taxable property, the net proceeds only of the mines being taxed.

APPENDIX No. 86.

REPORT IN REGARD TO THE MANUFACTURING INDUSTRIES OF THE CITY OF NEW YORK, PREPARED BY MR. WILLIAM C. WYCKOFF, SECRETARY OF THE SILK ASSOCIATION OF AMERICA, UNDER THE INSTRUCTIONS OF THE CHIEF OF THE BUREAU OF STATISTICS.

At the outset of this inquiry it was hoped that valuable data, suitable at least as a basis of information on the subject, might be obtained from prominent insurance officials. They, it was supposed, would be able to state approximately the value of dry goods remaining in the city at given seasons, or the average value throughout the year.

During less than a quarter of a century the dry goods interest of New York has been concentrating its stores and warehouses mainly within a space of fifty-eight blocks or squares, extending about half a mile in length and less than a quarter of a mile in breadth. Here is the focus of the entire dry goods business of the United States, and through the thoroughfares of this narrow locality passes the greater part of all such goods manufactured in or imported into this country.

Various conjectures have been hazarded from time to time as to the value of property in the so-called "dry goods district." Such estimates differed very widely. Perhaps their variance was not so great as the discrepancies which the historian Macaulay has chronicled in the opinions of intelligent public men as to the population of London before a census of its inhabitants was taken; but at best the figures offered were not nearly enough alike to inspire confidence.

The question of the value of this property would seem to be of gravest interest to fire-underwriters, the risks they have taken in the locality being supposed to sum up $200,000,000, exclusive of property not classified as dry goods. Nowhere else in the world is so large an insured value contained within so narrow space. Impressed by the magnitude of a risk which an extensive fire might convert into a loss, the leading insurance officers in the city made an elaborate investigation of the subject in 1883. They obtained many estimates from merchants carrying on different kinds of business in the district. The lowest of these estimates was $274,000,000; the highest about double that amount. Two leading houses gave estimates of $500,000,000 for the spring and fall periods of the year, when stocks are largest. The conclusion reached was that the value in the district is (including the buildings) at least $350,000,000 the year round, and exceeding that amount at intervals. Judging that a sweeping fire which should destroy values in the district to the extent of even the lowest estimate would beggar all the insurance companies, the officials deemed it needless to push investigations for more precise figures.

In the results thus obtained there is nothing to invalidate and much to confirm the conclusions reached in the present report.

Another mode of inquiry has been suggested for obtaining an appropriate estimate of domestic dry-goods coming to New York from New England. It is based on suppositions which are not unreasonable. We may consider in general terms that if the consumption of domestic goods in the New England States were deducted from the total dry-goods manufacture in those States the remainder can be regarded as the amount sent to New York City. In other words, the sale in New England of goods made there is chiefly for consumption therein. It is true, of course, that considerable quantities of domestic goods sold in New England go directly to localities outside of that region and other than New York City; but those quantities are probably offset by the amounts coming from New York for New England use. Assuming that the consumption of domestic dry-goods is twice as great per capita in the New England States as it is throughout the remainder of the Union, the following estimate might be made: The New England population uses 16 per cent. of its manufactured dry-goods; 84 per cent. of it, to be used elsewhere than in New England, goes to New York. Since there are no means of verifying the assumption as to the ratio in which New Englanders consume their dry-goods, this line of inquiry can hardly be raised to the dignity of statistics, though its results would not very widely disagree with that is hereinafter submitted.

To obtain *a more trustworthy basis, the first step taken was to compile from accessible sources an estimate* of the producing power of mills in the United States en-

gaged in dry-goods manufacture that have selling agencies in New York city. Afterward, more than five hundred inquiries were addressed to merchants, manufacturers, and agents, asking, as to the year ended June 30, 1884, for information concerning sales of domestic dry-goods, the proportion which actually passed through the city, and the sources whence the goods came.

A large number of inquiries were also made by more direct means and in person. A compilation of the amount of foreign dry-goods entering the port of New York in the same period has been made largely from custom-house returns, duties paid, and expenses connected with importations, the final values adopted being those of the goods in the market.

Very few commission merchants keep their accounts in such a manner as to be able to furnish full responses to inquiries about the passage of goods through the city; nor, in the majority of cases, can answers to such questions be obtained at the mills or factories. Many concerns close their accounts only at the end of the calendar year, and are not prepared with statements of business for a twelve-month ending in midsummer. In some instances great care was evidently bestowed in replying to the inquiries with accuracy, and in others useful estimates were submitted in lieu of figures. While gratefully acknowledging these instances, it must be admitted the answers did not prove so numerous and complete as had been anticipated. Even if the methods of the United States census could be applied to these inquiries it is doubtful whether satisfactory returns could be generally obtained.

A strip of country near and parallel to the sea-coast, of about 100 miles width, extending from a point a little south of Philadelphia to one a little north of Augusta, Me., includes nine-tenths of the territory from which domestic dry-goods come to New York City. We may picture to ourselves this area as what astronomers would call a resolvable nebula, made up of points of light of different degrees of brightness. Its closest aggregation appears in Rhode Island and Eastern Massachusetts, where more than half the woolens and cottons of New England are made; and there, too, the cities of Lowell and Lawrence, Providence and Pawtucket, shine notably, Fall River being not so bright because its chief article of manufacture (print-cloth) does not go directly to New York. More than half the entire light of the nebula comes from twelve or fifteen of its most brilliant stars, but there are at least fifty others worthy of note. Beside these, the field is sprinkled with six or seven hundred points of lesser light, none of them being indefinite "star-dust." Let us suppose that the centers of woolen industry give blue light, cotton yellow, and silk red. Many of the stars show blue and yellow mixed; but if the points of light for each pure color be counted the blue ones will be found almost twice as numerous as the yellow, and scattered over a wider area. Further observation reveals that the nebula extends more faintly westward, outside of the limits above named, through Vermont and the central portions of New York State, the little blue stars being everywhere most numerous and widely spread. The red stars are very few, and mostly large; one of them, Paterson, N. J., being of the first magnitude. Brighter than any other star in the nebula is the city of New York itself, shining with white light produced by a combination of all colors; and next in intensity is Philadelphia. True, New York has no cotton or woolen manufacture of note, and only a fifth of the silk; but it has an enormous business in the production of ready-made clothing and in kindred branches of industry.

This city has also become the great distributing point of the dry-goods trade. Houses originally established at Boston or Philadelphia to sell goods made in factories comparatively near at hand have found their New York branches gradually absorbing the business, so as eventually to reverse the original order of affairs, New York becoming the headquarters and the houses in other cities little more than agencies. This process has gone on for several years, and its results now seem to be permanent. Several causes have combined to bring this about, such as the concentration of capital and financial conveniences in the city; its largely increased facilities for land and water transportation, both inward and outward, and the circumstance that New York can offer to buyers their choice of European as well as American fabrics, since the bulk of foreign dry-goods comes to her port. For several years past from 94 to 96 per cent. of all the silk goods imported into the United States have been entered at the New York custom-house. As an instance of the transfer of business above referred to, it is stated that a large concern originally established in Philadelphia, and having a strong local trade there, now makes 95 per cent. of its sales in New York.

To designate the routes by which dry-goods reach and leave New York would be to name most of the railroad and steamboat lines that converge in and around the metropolis. From New England towns the bulk of these goods comes to the city by water routes, being carried chiefly by the many steamboats of Long Island Sound. Of course, in most instances the goods start on their travels by rail to reach the steamboats. Except when navigation is impeded by ice, few goods are sent exclusively by rail from the portion of New England which is east of the Connecticut River. To silk fabrics and others, in which great value is packed in small compass, the difference in cost of freight between land and water routes is less important than

to ordinary cottons and woolens, and the amount carried by rail though small in tonnage is large in value. From the western parts of New England; from New York State, except in a few instances of proximity or easy access to Hudson River navigation; from New Jersey, Pennsylvania, and the South, dry-goods come to New York almost wholly by railroads. The outward traffic, excepting only the small portions exported to foreign countries, is by railroad routes almost exclusively. Its distribution between different lines varies from time to time according to arrangements made for temporary periods between railroad and express companies.

The rule that a straight line is the shortest distance between two given points does not always control the movements of merchandise. Many of the largest mill owners send all their goods to New York, and fill no orders from the factory. But even where this is not the case it frequently happens that goods make a long detour to this city and back again when it would seem more natural that they should have been sent directly from the place of production. In general, the buyer designates the route by which his purchases from New York houses shall be sent. Most of the leading buyers in Western and Southern cities have freight contracts with railroads, and prefer to have goods shipped to them under such contracts from New York rather than from subordinate localities. Thus it happens that woolen fabrics made in the interior of New York State come down to the city and go back again on their way westward over the same railroad route, making an apparently needless journey of more than 500 miles. The products of mills in or near Philadelphia very frequently go back to or past their starting place after sale in New York. As a striking instance of the tendency (so to speak) of merchandise to pass through the city, it may be mentioned that large invoices have been brought down from Portland, Me., by steam propellers simply to get New York as their starting point, and then went immediately by Sound steamboats and railway connections up through Connecticut, Massachusetts, and Vermont to reach the Grand Trunk Railway of Canada at Montreal. These goods could have been put directly on that railroad at its terminus in Portland, where they started.

The chief explanation of such apparent anomalies is that business brings business. Similar occurrences can no doubt be cited in almost every other branch of trade. It is, for instance, a permanent feature of the food supply of Brooklyn that the greater portion of it (which comes from the interior of Long Island) is carried in farmers' wagons through the City of Churches by night to New York for sale. The grocers and butchers of Brooklyn follow across the East River an hour or two after the farmers, buy the meats and produce in New York, and cart the purchases back again across the river in the gray dawn of the morning.

In regard to goods sold in New York by commission houses or manufacturers' agents for delivery direct from distant factories, a question may be raised as to whether such sales constitute a portion of the commerce of the city or should be excluded in computing its amount. If the goods pass through New York, even though in unbroken bulk, as in the instance cited of shipments from Portland, it would seem proper to regard them as contributing to the city's commerce. When they do not pass through the city it is very doubtful whether they should be so included. But the passage through New York in bulk—though of frequent, not to say constant, occurrence, if the waters that wash the wharves be accounted as part of the city—is incidental, not essential to the transaction of selling goods. Such passage through New York or its waters may, and frequently does, take place with goods not sold in the city at all. The arrangements of transportation companies, changing at irregular intervals, may to-day pass large amounts of goods through the city and to-morrow send them wholly by outside routes. In the present compilation it is assumed that both sale in and passage through the city are requisite to constitute a part of its commerce. In the earlier stages of the inquiry an effort was made to obtain precise data on these points, in order to separate one class of cases from another. But it was found that the facts could not be ascertained accurately, and estimates only can be offered.

In the New England States cotton goods appear to be more largely sold for delivery from the mill than woolen goods. In Maine, for instance, large amounts are kept on storage, to be sent directly to purchasers on orders from New York. Due allowance for this estimated difference has been made in the compilation. The system does not apply largely out of New England; in fact, as between cotton and woolen goods in other regions, the reverse proposition might be nearer the truth.

Domestic goods contributing to the commerce of New York may be divided into two great classes—primary manufactures, such as the fabrics of whole cloth as they come from the mills, and secondary manufactures, such as ready-made clothing, men's furnishing goods, and the like. In the present compilation it is found that the total value of goods of the first class is three-fourths that of the two combined. Of primary manufactures forming part of New York's commerce, the New England States furnish one-half; Pennsylvania contributes largely to the remainder. Of goods of the *second class sold* in New York, seven-eighths are manufactured in the city

their materials are estimated as fully 60 per cent. of their value, and include a small proportion of imported articles.

In matters of business the two classes of goods are wholly distinct as commodities. They are dealt in by merchants of a different kind, and the trade of one class does not pass through the channels of the other. Each of these classes of goods may therefore be regarded as contributing its whole quota of value to the commerce of the city, notwithstanding the fact that the materials used in manufacturing the second class are derived from the first.

Nearly all the raw silk and considerable portions of the raw cotton, wool, flax, hemp, and jute consumed in domestic manufacture, pass through New York City in going to the mills. Such raw material is not usually accounted as dry-goods, and it has not been included in these computations; if added as a separate item it would increase the total by at least 5 per cent.

The subjoined figures indicate a commerce in dry-goods in the city for the year named of over $750,000,000, of which about one-fourth relates to imported goods. This cannot, however, be accepted as a statement of average annual commerce, since it applies to a year marked by a great decline in the values of all kinds of dry-goods, a shrinkage of probably not less than 15 per cent. Many estimates from trustworthy sources make the decline considerably greater.

If the values of goods sold in New York, but which do not pass through the city, and the values of goods which pass through but have not been sold in the city, should be included in this estimate of its commerce the total would probably be swelled to $800,000,000.

The figures of this compilation are at best only approximate. They are, however, the result of much toil and study, and are offered in the belief that they fairly represent most important interests and industries of the city of New York.

Internal commerce in dry-goods of New York City for the year ended June 30, 1884.

DETAILS.

Wool, manufactures of	$254,725,000
Cotton, manufactures of	174,474,000
Silk, manufactures of	93,744,000
Flax, manufactures of	31,293,000
Hemp, jute, &c., manufactures of	4,941,000
Mixed textiles, manufactures of	28,618,000
Ready-made clothing	94,393,000
Gloves, shirts, and men's furnishing goods	26,083,000
Hats and caps	21,341,000
Artificial flowers, feathers and straw goods	12,811,000
Millinery, laces, and corsets	10,965,000
Miscellaneous	14,514,000

SOURCES.

New England States	235,112,000
New York City	145,802,000
New York State, exclusive of city	65,923,000
New Jersey	39,416,000
Pennsylvania	68,645,000
Other States	23,723,000
Total domestic	578,621,000
Foreign countries	189,281 000
Total	767,902,000

APPENDIX No. 87.

STATEMENT PREPARED BY JUDGE JASPER W. JOHNSON, OF OREGON, CONCERNING THE COLUMBIA RIVER AND ITS NAVIGABLE TRIBUTARIES.

The Columbia River and its tributaries drain an immense country, as shown by the following table of drainage areas:

	Square miles.
Oregon:	
Willamette, and Columbia below mouth of Willamette	12,600
Des Chutes	10,000
John Day, Willow Creek, and Walla Walla	12,600
Snake River	17,200
Washington Territory:	
North side of Columbia, below Snake	8,000
Columbia, above Snake	30,360
Snake	5,200
Idaho:	
Columbia River	7,600
Snake River	70,040
Nevada: Snake River	6,280
Wyoming: Snake River	5,184
Utah: Snake River	700
Montana: Columbia River	20,800
British Columbia: Columbia River	38,395
Total area drained by Columbia	244,959

Thus it will be seen that the Columbia River drains an area greater in extent than Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, Pennsylvania, New Jersey, Delaware, Maryland, and West Virginia combined, with a population, according to the last census, of 17,719,980.

It is larger than England, Ireland, Belgium, Holland, Denmark, Switzerland, and Spain, with a population aggregating about 75,000,000.

Such being the condition as to size, the question arises, is it capable of furnishing prosperous homes for an equal number of people? To this question I reply as follows: The three essential conditions to the success of agriculture exist: First, a salubrious, health-giving, harvest-producing climate—that happy medium where the summers are warm enough to ripen crops and cool enough to secure the comfort of man and beast, and winters tempered to the mildness of Virginia by winds blowing from the Great Kuro Siwo of the Pacific. Second, a soil of natural fertility, unsurpassed by either of the countries mentioned; and third, sufficient moisture to render the soil productive. Consult a climatic map for the northern line of wheat production and it will be found that east of the Rocky Mountains its highest limit is near the mouth of the Saint Lawrence, at latitude 50°, while west of those mountains it is about 400 miles further north, and beyond the most northerly point reached by the Columbia River.

The undeveloped resources for manufacturing, shipbuilding, and commerce, including the wealth of coal, iron, copper, lead, gypsum, and other minerals, the unequaled forests of valuable timber, the great beds of marble, the exhaustless supply of food-fishes, and many other fields of employment for the profitable labor of man, are sufficiently known to pronounce them unsurpassed. In fact, there is little land in that vast region that is not good for either wheat, oats, barley, fruit, vegetables, hay, pasture, timber, mining, or some other useful purpose.

WATER-WAYS AND RAILWAYS.

Water-ways and railways are the two great highways over which commerce flows. Private capital will build the latter, but our people must look to the General Government for the improvement of our rivers and harbors. The prosperity of a country depends, in a great measure, upon the cheapness of its transportation; and experience has proven that however many the competing lines of railway, they pool their issues and keep up the prices of freight to a point that renders the people restless until restraining legislation is demanded, and that competing water-ways only can keep freight and passenger rates within reasonable bounds. The fact that freights from Chicago to New York invariably rise with the freezing of the water-ways and fall with the opening spring is but one of the many proofs of this proposition. The water may not carry the freight, but it forces the railway to a reasonable rate.

COMMERCE FLOWS EAST AND WEST.

It has been estimated that the value of the commerce over the great bridge at Saint Louis is four times that which moves beneath it upon the Mississippi. Where water-ways extend east and west, commerce follows them; but where rivers flow north and south the great commercial lines cross them. One of the great transcontinental lines of railway, destined to carry much of the commerce from the Orient to the Ind, across our continent, has upon the east, as a governor of freights, the lakes, the Erie Canal, and the Missouri River, and on the west the Columbia River, which, with a few needed improvements, will furnish water competition—the safeguard of the people against excessive transportation charges by grasping monopolies—from the Rocky Mountains to the sea. How great, then, must clearly appear the necessity for giving to the "River of the West" a free water-way and a deep and safe channel to the sea.

The expenditure of a moderate sum at its mouth will insure a good harbor entrance, a much better one than that at New York, for so it was found by Admiral Vancouver, of the English navy, who surveyed it in 1792, and who found that Clatsop Spit extended from Point Adams until there were but 2 miles between its end and Cape Disappointment. Then there was but one channel straight to the sea, with 27 feet at low water, and with over 30 feet on the "bar," as it is called.

Forty-eight years later it was again surveyed by Sir Edward Belcher, of the English navy, when it was found that a swash had broken across the Spit, thus widening the mouth, giving two tortuous channels each with about 20 feet of water.

In 1841 Admiral Wilkes, of the United States Navy, found that the spit had again grown out half a mile and united the waters of the two channels found by Belcher, giving 26 feet on the "bar" at low water.

Many subsequent surveys have convinced the Board of Engineers that the Columbia River can be restored to its excellent harbor entrance, as found by Vancouver, by extending a jetty from Point Adams over Clatsop Spit to a point opposite Cape Disappointment, thus narrowing the mouth until the scouring force of the waters of the river will carry the sand and silt far out into the deep sea.

The river is navigable for ocean vessels to Vancouver, 114 miles, and to Portland, on the Willamette, 120 miles from its mouth, flowing over a mud bottom easily dredged. In 1882 there were obstructions at Hog's Back, Walker's Island Bar, Saint Helen's Bar, mouth of Willamette, Post-Office Bar, and Swan Island Bar; but it was estimated by Captain Powell, engineer in charge, that only 137,418 cubic yards of mud and sand over an aggregate distance of 2¼ miles would need to be removed to insure a channel 100 feet wide and 20 feet deep in the Lower Columbia and Willamette. Part of this has since been accomplished.

STEAMBOAT NAVIGATION.

Steamboat navigation on the Columbia from its mouth up to The Cascades, a distance of 159 miles, is unobstructed, except when the river is closed by ice, which usually occurs each winter for a very short time, where the Columbia breaks through the mountains at and below the Cascades Rapids.

The Cascades completely obstruct navigation, but the Government is now engaged in the construction of a canal and locks which, when completed, will insure uninterrupted navigation to The Dalles, a distance of 206 miles from the mouth. At this point, also, navigation is completely obstructed, but the Government has taken the preliminary steps toward the construction of a canal and locks, and the necessities of a great and rapidly developing country demand that this contemplated improvement be hastened. When completed it will enable steamboats to pass from the mouth of the river to Grand Rapids, a distance of over 700 miles, through as fine a wheat-producing country as can be found on the globe.

Passing up from The Dalles the first obstacle to navigation is Priest's Rapids, 420 miles from the sea. These consist of a series of seven rapids, extending 11¼ miles. Captain Gora went with his steamer up through to good water above and turned round and returned while the river was at a low stage, but improvements here are greatly needed, as the navigation is difficult and dangerous.

The opening of the river through Priest's Rapids would give continuous navigation to Cabinet Rapids, 465 miles from the sea. This would provide the rapidly increasing settlements in the splendid valley of the Kittitas and Upper Yakima a short and easy outlet to the navigable river, and furnish a means of shipping grain to the vast, rich, and rapidly improving country on the east side of the river, scarcely known in 1881, but now constituting the prosperous county of Douglas. A distance of over 40 miles of navigable water lies between the head of Priest's Rapids and the foot of Cabinet Rapids. The latter should be improved in connection with Rock Island Rapids, 4 miles above. Probably navigation could be made satisfactory through these by the removal of a few rocks. The river would then be opened up an additional distance of 90 miles to the Nespilem Rapids, 10 miles above the mouth of the Okinakane, a distance of 560 miles from the sea. Lieutenant Symons believes that "by the removal of some obstructive rocks and points and the acquiring of a thorough knowledge of the river, its currents, channels, &c., it could be navigated with entire safety, provided no accident occurred on the steamboat itself."

The next serious obstruction to navigation is the Spokane Rapids. The needed improvement here would be of comparatively little expense, consisting of the removal of a few rocks by means of a steam-derrick. The rapids are short, and could now be easily lined over.

About 60 miles above are the Grand Rapids, totally obstructing navigation, with a fall of probably twenty feet within a distance of about a mile, and about 7 miles above are the Kettle Falls, where the river has a perpendicular fall at low water of 15 feet, and a few rods below another of 10 feet. Owing to the peculiar conformation of the shores and islands the river could be improved at comparatively small cost.

The Little Dalles, the last obstruction within the United States, is about 15 miles south of the point where the Columbia crosses the British line. The fall here is inconsiderable, and by the removal of about 40,000 cubic yards of limestone rock, easily removed, no obstruction to navigation would exist. Above this point the river has been navigated by the steamer "49" for a distance, according to Captain Pigstone, of 180 miles to Death Rapids, over 1,000 miles from the sea.

Just north of the boundary line is the mouth of the Pend d'Oreille River. The lower portion of its course, for a distance of about 35 miles, is reported as unnavigable, but it does not appear to have been examined. It is navigable from the Six-Foot Falls through the entire length of Pend d'Oreille Lake and 9 miles above, and Dr. Suckley thinks that during high water steamers might ascend 100 miles farther.

About 25 miles beyond the boundary the Columbia receives from the east the waters of the Kootenay River. This river is not navigable at its mouth, but by making a short portage a navigable portion is reached, which extends about 300 miles, about 100 of which are within the United States. This country is rich in timber and gold, and has many fine valleys.

The Willamette River and its tributaries drain the Willamette Valley, a valley larger than Vermont or New Hampshire, nearly as large as Maryland, larger than New Jersey or Massachusetts, nearly three times as large as Connecticut, five times the size of Delaware, and ten times as large as the State of Rhode Island. Were this valley populated in proportion to the valley of the Ohio, it would have 550,000 people; or the valley of the Susquehanna, over 725,000; or the Merrimac River, 1,076,000; or as the Hudson or Delaware Rivers, over 2,000,000; and were the valley settled as thickly as Massachusetts, it would support 2,500,000 people. Oregon has already expended several hundred thousand dollars in opening the Willamette River by canal and locks to navigation from Portland to Eugene City, 172 miles by river. The General Government, during the last thirteen years, has made small annual appropriations to improve various bars and places, namely: at Rock Island, Polalley, Fam Hill, Union, Beaver and Lone Tree Bars, McCloskey's Chute, Eola Bar, Rocky and Humphrey's Rapids, Long Crossing, Buena Vista, Eckel's, Pine Tree, Bruce's and Stewart's Bars, Half Moon Bend, and other places, and to remove snags which accumulated along the heavily timbered river from annual freshets.

TRANSCONTINENTAL COMMERCE.

Deep-draft ocean vessels, propelled by steam, carry their foreign cargo up and their return cargo down navigable rivers cheaper than by any other method of conveyance, and every cheapening of freight inures to the benefit of the producer and consumer. With the improvements now in progress on the Lower Columbia and Willamette *large ocean* vessels will ascend to Portland as readily as they enter at New York.

or the Golden Gate. From here the Columbia River, as a great artery either to carry the trade and commerce or to regulate the cost of transportation, reaches far out along the valley route made by nature from the Pacific towards the Atlantic—the route adopted by the Northern Pacific Railroad—and along this line there is now unobstructed navigation from the Dalles to a point 30 miles above Lewiston, in Idaho, 589 miles from the sea, and steamboats have ascended still 80 miles beyond. The Clearwater is being improved by the Government to add 40 miles to the free water along this line where now the North Pacific competes for the transcontinental carrying trade.

Within one step are springs whose waters respectively run to the east and to the west, and for mining purposes the waters of the Missouri have actually been turned into the Pend d'Oreille. It may not be visionary, therefore, to predict that the day will come when, through discoveries and new surveys, engineering skill may, by waterway transportation, unite the products of the Pacific with those of the Gulf and the Lakes and the Hudson River. Whether this shall occur, it yet remains clear that improvements in the Columbia and Missouri rivers will insure a regulator to the Northern Pacific Railroad, and prevent it from pooling with the other transcontinental lines, and thus keep down freights upon each and all of them, adding to the safety and happiness of the whole American people.

APPENDIX No. 88.

STEAMSHIP LINES ENGAGED IN TRADE AT THE PORT OF SAN FRANCISCO, 1885.

FOREIGN TRADE.

Nationality	Name of line.	Sailing to—	No.	Tons.
American..	Pacific Mail Steamship Company.....	Japan and China.....	4	10,335
Do.....	.....do	Panama	6	9,518
Do.....	.....do	Hawaiian Islands and Australia..	1	1,966
British ...	.....do	.....do	2	3,427
	Total	.....	13	25,246
British	Occidental and Oriental Steamship Company.	Japan and China.....	2	5,228
American.	Oceanic Steamship Company	Honolulu	2	3,878
Do.....	California and Mexican Steamship Company.	Mexico	1	677
Do.....	Pacific Coast Steamship Company.....	British Columbia.....	2	2,897
Do.	R. D. Chandler's Line.....	.....do	1	526
Do....	Merchants' Independent Steamship Line.	.....do	1	752
Do....	Robert Dunsmeier's Line (Collier's)	.....do	2	2,357
	Total	.....	11	16,315

COASTING TRADE.

American..	Pacific Coast Steamship Company.....	Southern California.....	4	3,031
Do	.....do	Oregon	1	1,260
Do.....	Oregon Railway and Navigation Company.	.....do	2	3,388
Do.....	Oregon Improvement Company.....	Washington Territory.....	2	2,267
	Total	.....	9	9,946

E. B. JEROME.

SAN FRANCISCO, *May* 11, 1885.

APPENDIX No. 89.

STATEMENT SHOWING THE MILEAGE OF THE CENTRAL PACIFIC RAILROAD AND ITS BRANCHES, THE NAME AND MILEAGE OF EACH BROAD-GAUGE RAILROAD OWNED, LEASED, OR OPERATED BY THAT COMPANY IN THE STATE OF CALIFORNIA AT THE CLOSE OF THE YEAR 1884.

	Mileage.
Central Pacific Railroad	273.71
Branch railroads:	
Roseville to Delta	191.87
Lathrop to Goshen	146.08
Niles to San José	17.53
Oakland Wharf to Brooklyn	5.66
Alameda Wharf to Melrose	10.00
Total mileage of branch lines	371.14
Railroads leased and operated:	
Southern Pacific of California, from Huron to Colorado River	528.00
Los Angeles to San Pedro	25.00
Los Angeles and San Diego to Santa Ana	28.00
Los Angeles and Independence to Santa Monica	17.00
Stockton and Copperopolis to Milton, Peters, and Oakdale	49.00
Amador Branch to Ione	27.20
Berkeley Railroad to Shellmount	3.84
California Pacific to Vallejo — 2	
California Pacific to Sacramento — 60	
California Pacific to Knight's Landing — 18	
California Pacific to Calistoga — 35	
	115.44
Northern Railway to Suisun — 17	
Northern Railway to Martinez — 35	
Northern Railway to Willows — 64	
Northern Railway to Tehama — 37	
	153.63
San Pablo and Tulare Railroad to Tracy	46.51
Sacramento and Placerville Railroad	48.00
Total mileage of lines leased and operated	1,041.62

RECAPITULATION.

Total mileage of main line	273.71
Total mileage of branch line	371.14
Total mileage of railroads leased and operated	1,041.62
Total mileage, broad-gauge	1,686.47

APPENDIX No. 90.

THE LEASING OF THE LINES OF THE SOUTHERN PACIFIC RAILROAD COMPANY, THE CENTRAL PACIFIC RAILROAD COMPANY, THE GALVESTON, HARRISBURG AND SAN ANTONIO RAILWAY COMPANY, THE TEXAS AND NEW ORLEANS RAILROAD COMPANY, THE LOUISIANA WESTERN RAILROAD COMPANY, AND OF MORGAN'S LOUISIANA AND TEXAS RAILROAD AND STEAMSHIP COMPANY, BY THE SOUTHERN PACIFIC COMPANY.

[From the first annual report of the president and directors of the Southern Pacific Company, held at Louisville April 8, 1885.]

LEASES.

Contracts have been entered into with each of the above-named companies* for the lease of their respective railroads and their appurtenant property, so as to form one continuous through line between San Francisco and New Orleans, with the addition of efficient steamship lines between New Orleans and New York, and between Gulf ports, for a period of ninety-nine years from the first day of March, 1885. In consideration of the benefits to accrue from the lease, this company agrees to maintain the roads in good order, add to and better the same, as may be necessary, to pay all the ordinary expenses, fixed and other charges against them, including the payment of interest upon their bonded indebtedness and sinking-fund requirements.

The road leased from the Southern Pacific Railroad Company of California does not include the Colorado division now operated under lease by the Atlantic and Pacific Railroad Company.

The lessor companies are to receive as rental, percentages of the entire surplus net profit accruing to the lessee, distributed annually in the following proportions:

	Per cent.
Southern Pacific Railroad Company of California	26½
Southern Pacific Railway Company of Arizona	12
Southern Pacific Railroad Company of New Mexico	4
Galveston, Harrisburg and San Antonio Railway Company	16½
Texas and New Orleans Railroad Company	7½
Louisiana Western Railroad Company	3½
Morgan's Louisiana and Texas Railroad and Steamship Company	22½
Total	92½

LEASE OF THE CENTRAL PACIFIC RAILROAD.

It had become evident that by the creation of rival transcontinental railroads the through business of the Central Pacific was being diverted, and was liable to be still more encroached upon by its neighbors. Our company was in a position to afford a certain protection to the Central Pacific in respect to its share of through business; while, on the other hand, it was in position to afford equal protection to this company. By consolidating the administrative, mechanical, and operating departments of these heretofore separate organizations, greater efficiency and economy will be secured to the contracting and controlling company; and, at the same time, a more complete responsibility will be afforded to their patrons, to connecting lines, and to the public.

* Southern Pacific Railroad Company of California, Southern Pacific Railway Company of Arizona, Southern Pacific Railway Company of New Mexico, Morgan's Louisiana and Texas Railroad and Steamship Company, Galveston, Harrisburg and San Antonio Railway Company, Texas and New Orleans Railroad Company, Louisiana Western Railroad Company, Mexican International Railroad Company.

Therefore, in addition to the foregoing lease of roads between San Francisco and New Orleans, this company has entered into an agreement of lease with the Central Pacific Railroad Company for the use of its entire road, branches, and dependencies, for a period of ninety-nine years from and after April 1, 1885, taking over the agreements of lease which it had with certain roads in California.

Under the terms of the present lease (which were deemed to be fair and reasonable in view of existing conditions) this company, in addition to the payment of all ordinary expenses, interest upon funded and floating debt, and the existing sinking fund and Government requirements, also guarantees a minimum rental of $1,200,000 per annum (which may be increased, if net earnings of the leased road justify, to $3,600,000); any excess of earnings over and above the latter sum to be retained by the lessee company in consideration of the management, risk, and guaranty. Provision is made, however, that if, at any time, through a changed condition of affairs, the terms of the lease appear to be operating unjustly, or that one of the parties is being benefited at the expense of the other, the terms may be readjusted by friendly arbitration—the effect and purpose of the contract being their mutual protection and benefit under such conditions as shall be equitable and just between them.

The roads operated—main line, branches, and tributaries—under lease aggregate about 4,750 miles, the gross earnings of which (exclusive of land sales and income from sinking funds and investments) were, in round numbers, in 1883, $34,500,000, and in 1884, $30,000,000. Neither year, by reason of short crops and other unfavorable, but transient drawbacks, affords a fair criterion of the earning capacity of the Southern Pacific line; as during the former the through line would hardly be said to have been opened, while during the latter period the revenues were further cut down by repeated interruptions from unprecedented floods, and by prevailing depression in general industry. Roads indirectly controlled through ownership of stock, but not leased, are not included in the above.

SOURCES OF LOCAL BUSINESS.

Holding and controlling what is virtually the shortest road across the continent for freight purposes on United States territory, the advantages of the Southern Pacific Company, including its steamship connections, are such as to challenge the attention and respect of all other competing lines. Its railroads and their feeders traverse a territory at present only sparsely settled, but possessing a fertile soil and a genial climate, with great capabilities as the seats of future population, production, mines, manufactures, and commerce. Cotton, cattle, wool, wine, fruits, and grain in enormous quantities can be raised in the vast area of country it occupies, while the precious metals in the intermediate and outlying territories will afford constantly increasing occupation for your facilities.

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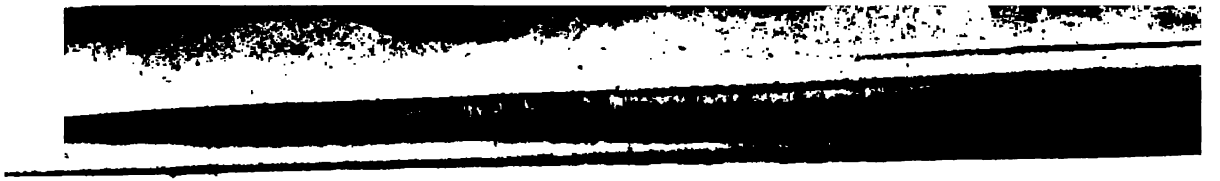

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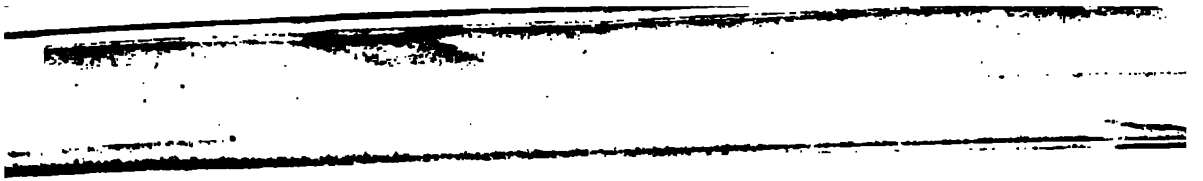

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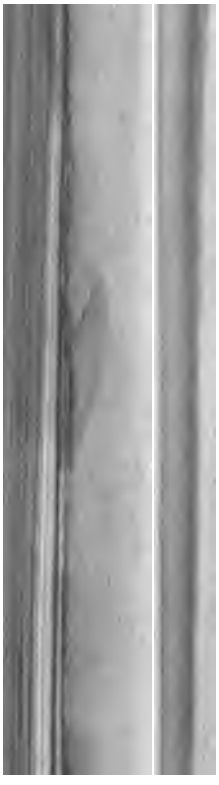

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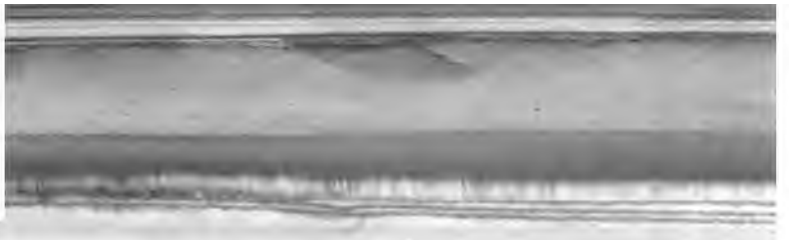

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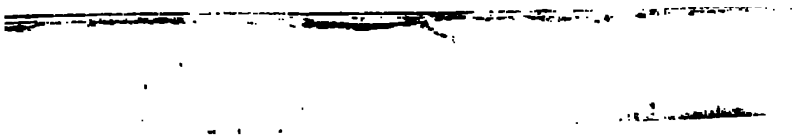

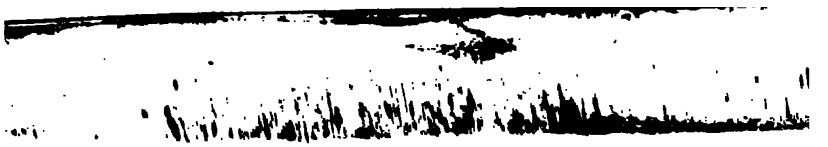

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